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EQUILIBRIUM®

QUARTERLY MAGAZINE OF THE INTERNATIONAL SOCIETY OF ANTIQUE SCALE COLLECTORS

2013 ISSUE NO. 1 PAGES 3881 - 3908

Cover Picture

This roberval scale retains most of its original decoration. Painted on the base is *Summit, Morten Bros., Cin, O.* and cast into the iron base is *Fine Cut.* The scale base is finished in Vermillon and green making it a striking example of an uncommon tobacco advertising scale. Research found the Morten Brothers Produce and Commission Merchants was located at 78, 80 & 82 West Front St in Cincinnati, Ohio and was advertised in the *State Gazetteer and Business Directory for 1860-1861.* The balance has brass pans, a base measuring 12 by 4¼ inches and is indicative of the work of Henry Troemner.

Leslie N. Firth Collection.

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INTERNATIONAL SOCIETY OF ANTIQUE SCALE COLLECTORS

EQUILIBRIUM is published quarterly in February, May, August and November.

 ISSN: 0893-2883

Coin Scale Boxes Made in and for Spain

BY FRANCISCO VALLÉS & LUDWIG RAMACHER

Part two: Makers and verifiers of coin scale boxes in Barcelona

In part 1[1] we described the situation in Valencia. Now we move about 300 km northeast to Barcelona, nowadays a town of 1,600,000 inhabitants and the capital of the autonomous region of Catalonia, with tourists particularly enthralled by the astonishing architecture by Gaudi.

The very early history of Barcelona is not too clear. One idea about the foundation is related to the Phoenecians and Hamilkar Barkas (the father of Hannibal). That cannot be proved, but sounds more realistic than Herakles being the founder, which is the other tale. Named Barcino around the time of Augustus, it was less important than neighbouring cities like Tarragona, now a world cultural heritage for the Roman era.

Following the decline of the Roman Empire, Barcelona was ruled by the Visigoths until about 717 AD when it was conquered by the Moors. Unlike other Spanish regions, the time of the Moorish reign was only a few decades, as in 801 Barcelona was re-conquered by Louis the Pious, a son of Charlemagne, to be a part of the Spanish March in the Carolinian kingdom. In the 12th century Barcelona was one of the main cities of the united crowns of Catalonia and Aragon, which had also important possessions in Sicily and other parts of Italy. After 1469 with the marriage of Isabella of Castile and Ferdinand of Aragon the remaining two Spanish crowns were united. Till the early 18th century Catalonia kept many of its privileges and special laws. Later Barcelona played a prominent role in the fight for democracy against the troops of the fascist general Franco in the 20th century.

The first coinweights in Catalonia and Aragon are reported from the early 14th century for silver coins like the croat, later for the florin and ducat[2], until the early 18th century, when the Castilian coins became obligatory. The area had an interesting kind of multiples of coinweights for the single units of coins with masses for up to 50 units. These coinweights are well covered in the book of Crusafont[3]. No coin scale boxes made in the area are known to us earlier than 1700 AD. We will concentrate in this part on those coin scale boxes that we can clearly connect with Barcelona and describe the types we know.

Just as we showed previously for Valencia, the verifiers for weights and scale makers in Catalonia were not from the guild of silversmiths, whereas it was obligatory for centuries in Castile that they be silversmiths. The verifiers of scales, weights and barrels in Barcelona were locksmiths (at least until the 19th century). This tradition was kept by a royal decree[4], even after most of the privileges of Catalonia were taken away. The locksmiths were organised in their own guild, ('*gremi*'). The families we discuss below as scale-makers or verifiers had many other members working as locksmiths or other professions; several of the families were related to each other (see Deop-Cristiá-Surroca[5]).

Between about 1710 and 1890 the most common type of box was an oval box made from plywood, common in the sense that these boxes can be easily found in markets or auctions. The multitude of such boxes allows us to conclude that they were produced on a large scale. Other types of boxes were cut-from-solid wood. From pictures we also know boxes similar to the common ones but they were rectangular and made of cardboard. One may think that the cut-from-solid boxes were made for travelling traders, while the others had solely local use.

Bottom to top of the common boxes is about 3 mm, the two sides of thin wood (about 0,5 mm thick) bent probably using steam, to make the form stable. The shape of those boxes did not change during the period described here, neither did their way of construction.

They are between 13 and 17 cm side-to-side and 6,5 to 8 cm back-to-front. As the makers were locksmiths, the boxes were most likely made by co-working carpenters.

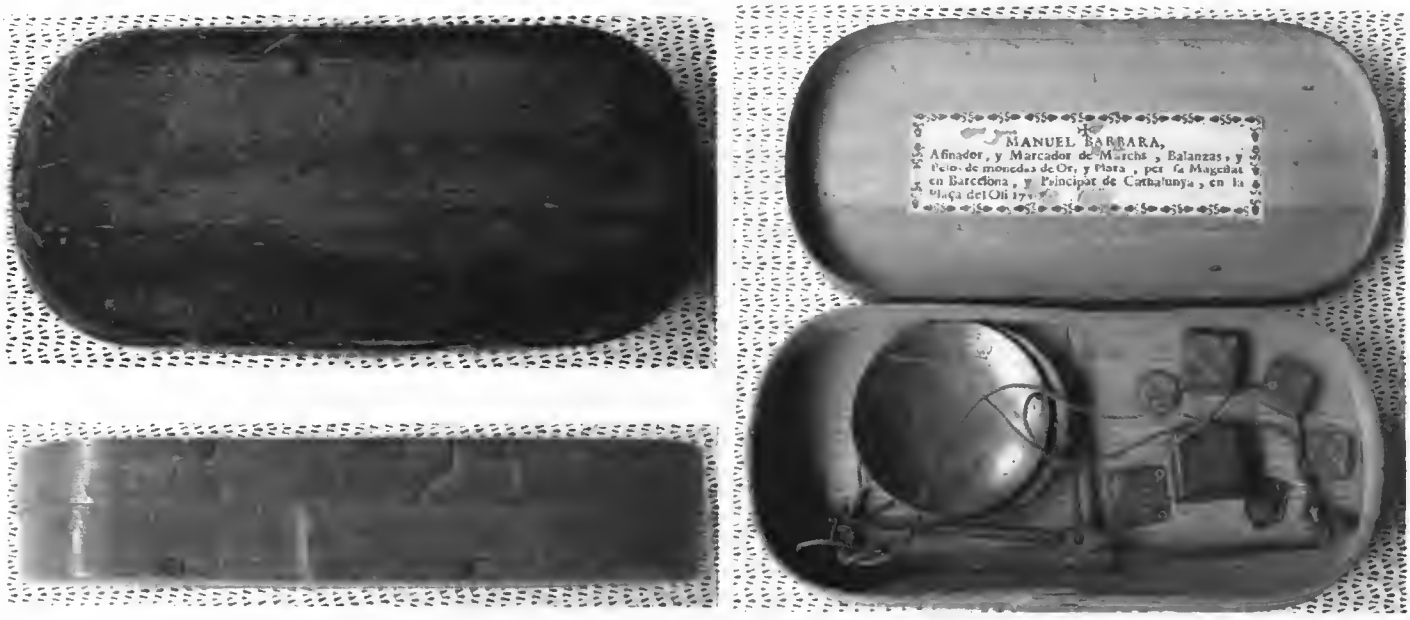


Figure 1. ^^ typical plywood box closed and open, made by Manuel Barbara

Thc content of these boxes was quite constant over time, following the development of the Castile coins, which were obligatory in Catalonia after the war of the Spanish succession, when Catalonia lost its independent legislation and coinage.

vooo (later with 16 for 16 duro)	27,06 g
oooo (later with 8)	13,53 g
oo (later with 4)	6,77 g
o (later with 2)	3,38 g
xx or later ½	1,69 g
oo (16 grain) oo	0,84 g
oo (8 grain)	0,42 g
o (4 grain)	0,21 g
½ (2 grain)	0,11 g

Due to the fact that both scale and coinweights were loose in the box, weights could get lost easily, the first reason why it is difficult to get a box in its original complete composition. Secondly, it was easy and made sense for the user to replace lost weights or add new coinweights or weight-like things (plates of metal, coins), to make it useful for any newly minted coins.

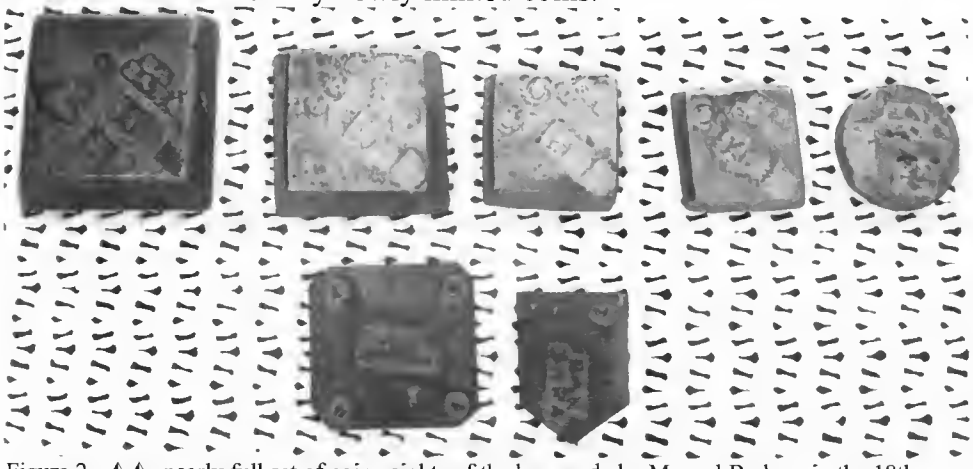


Figure 2. ^^ nearly full set of coinweights of the box made by Manuel Barbara in the 18th century, two fractional weights missing

And obviously it was also easy for dealers or collectors to put weights in the boxes which were not original, but very similar, or which had nothing to do with it, often done with little knowledge of the right composition.

The beams typically have swan-neck endings, and are made from steel. The pans are of brass with silk cords. We think that the scales were all made in the area and not imported.

During that time the boxes had several different ways of labelling.

- handwritten into the lid.
- a simple printed label just describing the maker or verifier
- several different types of labels (with or without signifying the maker) describing the coins to be checked and the way to use the box.

The different types of labels

The following pictures of the different labels are combined with the translation. The language used is Castilian (what we now call Spanish), we found only in one period, labels also in Catalonian.

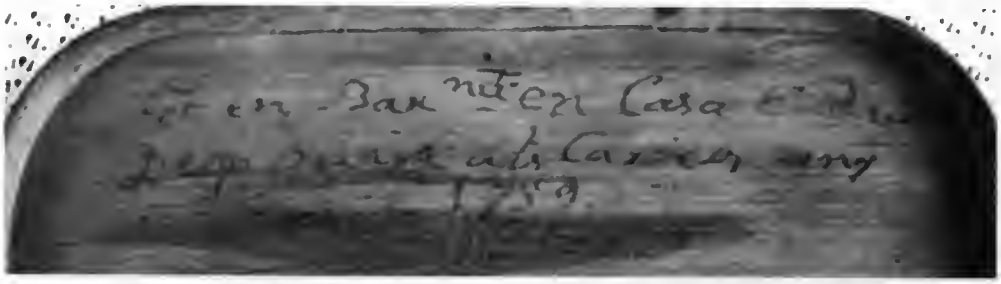
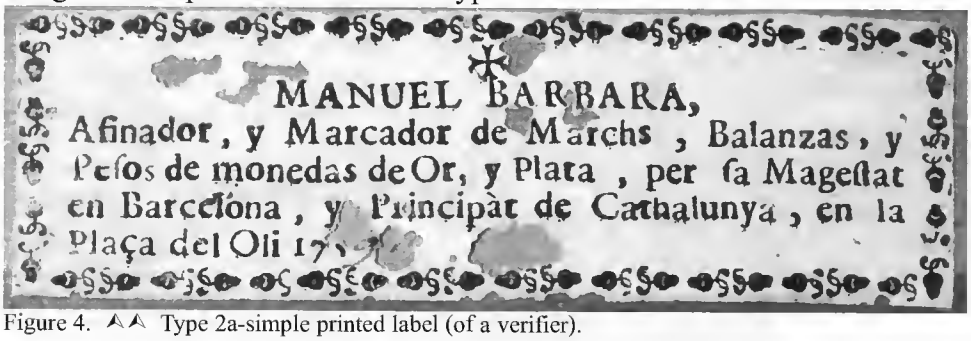


Figure 3. ≺≺ Type 1-handwritten label.

Made at Bar(celo)na at the house of Eudalt Deop by hand "at Car de o" (?) in the year 1759.

Type 1 is found mainly in the first half of the 18th century. 1759 is the latest we have. The members of the Roig and Deop families used this type.



Manuel Barbara
Verifier and Marker of the Marks,
Scales and weights
for coins of gold and silver
for His Majesty of Barcelona
and Principality of Catalonia, at placa
del Oli, 1759

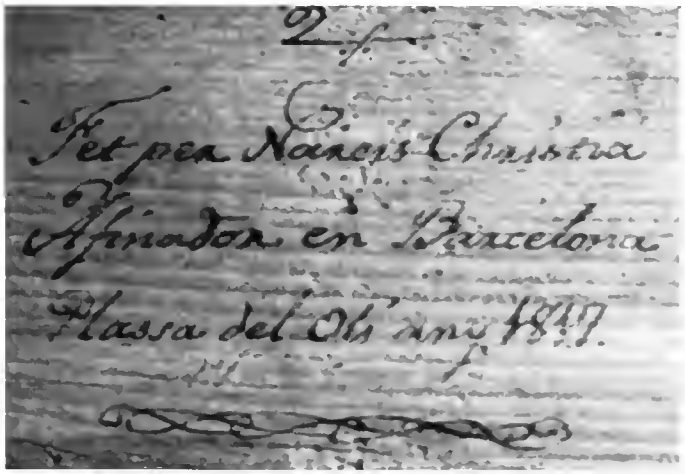
Figure 4. ⩓⩓ Type 2a-simple printed label (of a verifier).

Type 2a can be found for the families Barbara (only Manuel), Crusats and Farriols.

At Barcelona, in the house of
Gaspar Oller, at carrer de
Regomi, 1769

Figure 5. ⩓⩓ Type 2b-simple printed label (of a maker).

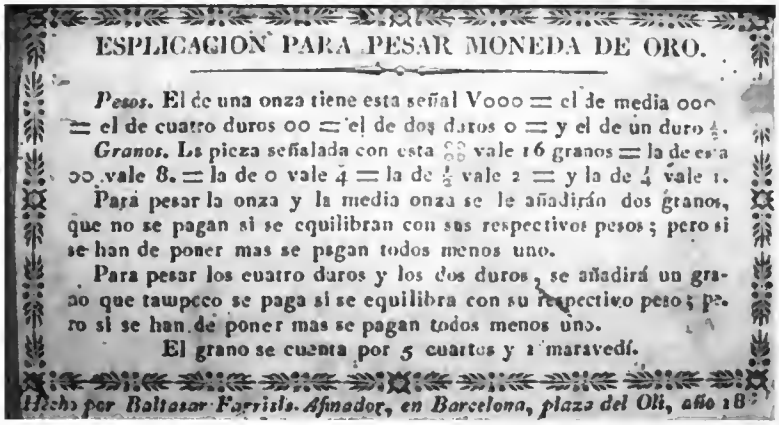
Gaspar Oller and Francisco Barbara used this type. Type 2a and 2b have been used in parallel with the hand-written labels until the end of the 18th century, as far as we can ascertain.



Made for Narcis Christia verifier in Barcelona Plassa de Oli, year 1817.

Figure 6. ⅄⅄ Type 3-handwritten label.

The reason why handwritten labels reappeared in the early 19th century is unknown to us. We found this version only used by Narciso Christia, who later changed to a printed label again.


ESPLICACION PARA PESAR MONEDA DE ORO.

Pesos. El de una onza tiene esta señal Vooo = el de media ooo = el de cuatro duros oo = el de dos duros o = y el de un duro ½.

Granos. La pieza señalada con esta 88 vale 16 granos = la de esta oo vale 8. = la de o vale 4 = la de ½ vale 2 = y la de ¼ vale 1.

Para pesar la onza y la media onza se le añadirán dos granos, que no se pagan si se equilibran con sus respectivos pesos; pero si se han de poner mas se pagan todos menos uno.

Para pesar los cuatro duros y los dos duros, se añadirá un grano que tampoco se paga si se equilibra con su respectivo peso; pero si se han de poner mas se pagan todos menos uno.

El grano se cuenta por 5 cuartos y 1 maravedí.

Hecho por Baltasar Farriols. Afinador, en Barcelona, plaza del Oli, año 18

Figure 7. ⅄⅄ Type 4-label used between 1826 and 1846(?).

Weights: That of one onza has this mark vooo; that of the half (onza) oooo; that of four duros oo; that of two duros o; and that of one duro ½.

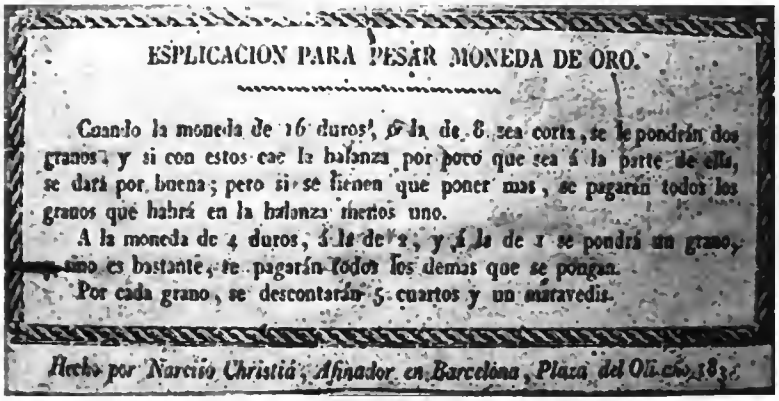
Grain (weights): The piece marked with 88 is worth 16 grains, that with oo is worth 8, that with o is worth 4, that with ½ is worth 2, and that with ¼ is worth 1.

To weigh the onza and the half onza (coins) two grains will be added, which are not paid if they are in equilibrium with their respective weights, if more has to be added all minus one have to be paid.

To weigh the 4 duros and the 2 duros, one grain is added, which is not paid if they are in equilibrium with their respective weights, but if more has to be added, they pay all minus one.

The grain (of gold) counts as 5 cuartos and 1 maravedi.

Of the label type 4 helpfully we have several with clear identification of the year of making. It looks as if it has been only used by Baltasar Farriols.


ESPLICACION PARA PESAR MONEDA DE ORO.

Cuando la moneda de 16 duros, ó la de 8 sea corta, se le pondrán dos granos; y si con estos cae la balanza por poco que sea á la parte de ella, se dará por buena; pero si se tienen que poner mas, se pagarán todos los granos que habrá en la balanza menos uno.

A la moneda de 4 duros, á la de 2, y á la de 1 se pondrá un grano, sino es bastante, se pagarán todos los demas que se pongan.

Por cada grano, se descontarán 5 cuartos y un maravedí.

Hecho por Narciso Christiá, Afinador en Barcelona, Plaza del Oli año 183

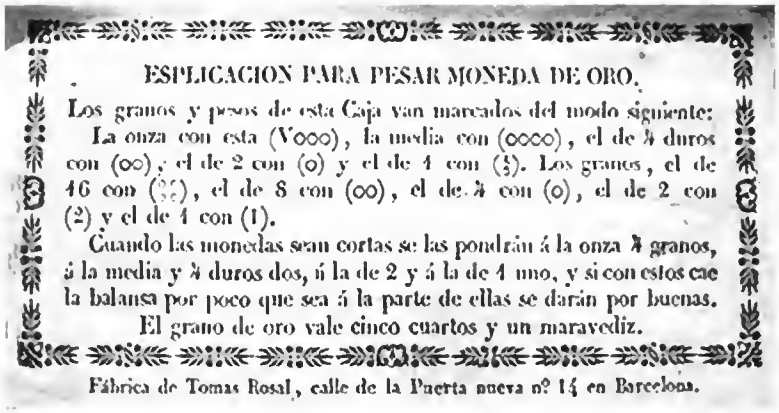
Figure 8. ⅄⅄ type 5-label used at the time between 1833 and 184x?

When the money of 16 duros or that of 8 is short, two grains shall be added, and if with those the scale tips on the side of those, they are accepted as valid; but if it is necessary to add more, they have to pay all the grains which are on the scale minus one.

For the coin of 4 duros, of 2 and of 1, one grain is added, and if it is not sufficient, they have to pay all that are missing.

For each grain (of gold), 5 cuartos and one maravedi have to be deducted.

This label we have for Narcisco Cristia with and without identifying this maker. Sometimes the sentence about the maker was cut off, but the reason is unclear. Two types of label appear for Cristia, one used in the 1730s, one possibly in the 1740s.



ESPLICACION PARA PESAR MONEDA DE ORO.

Los granos y pesos de esta Caja van marcados del modo siguiente: La onza con esta (V○○○), la media con (○○○○), el de ½ duros con (○○), el de 2 con (○) y el de 1 con (½). Los granos, el de 16 con (88), el de 8 con (○○), el de 4 con (○), el de 2 con (2) y el de 1 con (1).

Cuando las monedas sean cortas se las pondrán á la onza 4 granos, á la media y 4 duros dos, á la de 2 y á la de 1 uno, y si con estos cae la balanza por poco que sea á la parte de ellas se darán por buenas.

El grano de oro vale cinco cuartos y un maravedíz.

Fábrica de Tomas Rosal, calle de la Puerta nueva nº 14 en Barcelona.

The grain (weight)s and weights of this box are marked in the following way:

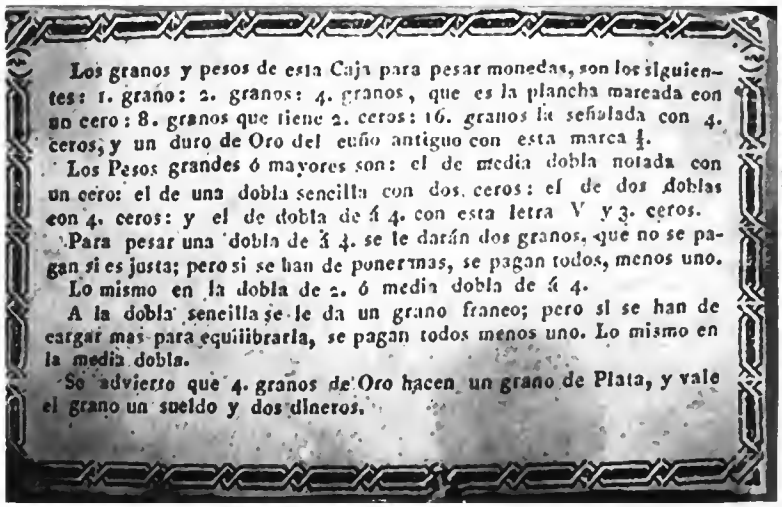
The onza with this (V000), the half with (0000), that of 4 duros with (00), that of 2 with (0) and that of 1 with (½). The grains, the 16 with 88, the 8 with (00), the 4 with (0), the 2 with (2) and the 1 with (1).

If the coins are light, add 4 grains to the onza, 2 grains to the half [onza] and the 4 duros and one grain to the 2 and 1 [duros]; If the scale tips, even if it is only a little, the coins will be accepted as valid.

The grain of gold is worth 5 cuartos and one maravedi.

Figure 9. ⩓ Type 6-label.

Typically this type of label is found without mention of the maker. The one in the picture indicates that the box was made by Tomas Rosal, whom we know for sure worked after 1844. It does not mention the piece of 5 duros, which is another argument to say that it already was in use in the 1840s or earlier.-



Los granos y pesos de esta Caja para pesar monedas, son los siguientes: 1. grano: 2. granos: 4. granos, que es la plancha marcada con un cero: 8. granos que tiene 2. ceros: 16. granos la señalada con 4. ceros; y un duro de Oro del cuño antiguo con esta marca ½.

Los Pesos grandes ó mayores son: el de media dobla notada con un cero: el de una dobla sencilla con dos ceros: el de dos doblas con 4. ceros: y el de dobla de ½ 4. con esta letra V y 3. ceros.

Para pesar una dobla de ½ 4. se le darán dos granos, que no se pagan si es justa; pero si se han de ponermas, se pagan todos, menos uno.

Lo mismo en la dobla de 2. ó media dobla de ½ 4.

A la dobla sencilla se le da un grano franco; pero si se han de cargar mas para equilibrarla, se pagan todos menos uno. Lo mismo en la media dobla.

Se advierte que 4. granos de Oro hacen un grano de Plata, y vale el grano un sueldo y dos dineros.

The grain [weights] and weights of this box to weigh money are the following: 1 grain, two grains, 4 grains, which are on the plate marked with one circle; 8 grains, which has 2 circles and 16 grains which has 4 circles and one duro of the old fashioned way with this mark ½.

The greatest or largest weights are: the half dobla marked with a circle; that of the simple dobla with two circles; that of two doblas with 4 circles; and that of the four dobla with V and three circles.

To weigh a four dobla, two grains are allowed, which are not paid if it is right, but if more have to be added, all have to be paid minus one.

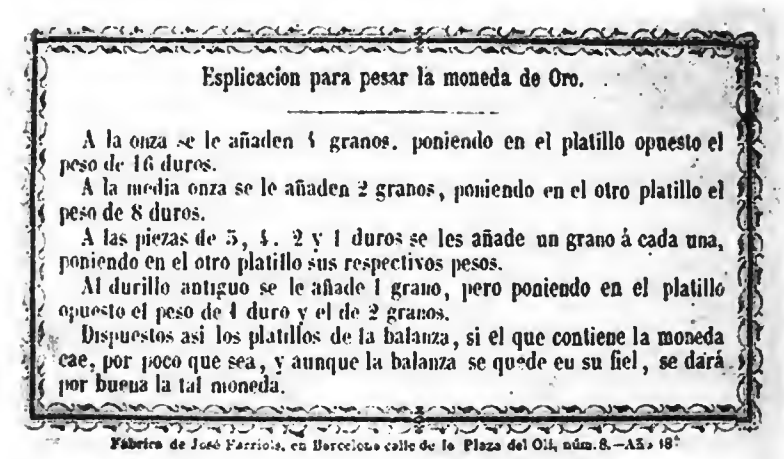
The same with the two dobla or half dobla of four.

For the simple dobla one grain is added free, if more has to be added for the equilibrium, everything minus one has to be paid. The same for the half dobla.

Be informed that four grains of gold do one grain of silver and are worth per grain one sueldo and two dineros[6].

Figure 10. ⩓ Type 7-label.

This type of label typically has no mention of the maker. Also this label does not mention the 5 duro piece, so again probably came into use in the 1840s, or earlier.



Esplicacion para pesar la moneda de Oro.

A la onza se le añaden 4 granos, poniendo en el platillo opuesto el peso de 16 duros.

A la media onza se le añaden 2 granos, poniendo en el otro platillo el peso de 8 duros.

A las piezas de 5, 4, 2 y 1 duros se les añade un grano á cada una, poniendo en el otro platillo sus respectivos pesos.

Al durillo antiguo se le añade 1 grano, pero poniendo en el platillo opuesto el peso de 1 duro y el de 2 granos.

Dispuestos asi los platillos de la balanza, si el que contiene la moneda cae, por poco que sea, y aunque la balanza se quede en su fiel, se dará por buena la tal moneda.

Fábrica de José Ferriols, en Barcelona calle de la Plaza del Oli, núm. 8.—Año 18

To the onza four grains shall be added, then put the weight for 16 duros on the opposite pan.

To the half onza 2 grains shall be added, then put on the other pan the weight for 8 duros.

To the pieces of 5, 4, 2 and 1 duros in each case add one grain and put on the other pan the respective weights.

For the old durillo one grain shall be added, but put on the opposite pan the weights of 1 duro and that of two grains.

The pans of the balance are prepared in this way, so if that containing the money tips, even if only a little, or if the scale remains in equilibrium, the money can be taken as good.

Figure 11. ⩓ Type 8-label.

This is the only label also mentioning the piece of 5 duros, which was introduced during the reign of Isabella II after 1850, when the coinage system was changed to be decimal. We know only Jose Farriols as producer of this type.

When we started to work on this article we hoped that we could give finally clear guidance to the collector using the labels to identify the period of a box's manufacture. We are sure that our evidence will be a good help to determine the dating of boxes, but we were also surprised, after studying a multitude of boxes and their labels from our and foreign collections, how over many periods the use of certain types overlap. One can say for sure that all labels with a detailed description are from the 19th century and the five known types of such labels can be identified within no more than three decades.

Labels from type 4 to 8 describe in sentences sounding simple and clear how to use the boxes to check whether a coin is still okay. The names of the coins used on the labels have little to do with the official names of any coin used between about 1825 and 1890. Probably, the terms used were those used by the ordinary people. Onza stands for the "doblon de ocho (8) escudos", media onza for "cuatro (4) escudos". Durillo means "medio (½) escudo".

Duro is used for the silver coins called reales on the early labels, but later also for the new gold coin introduced by Isabella II with the value of 5 duros (100 reales).

It is also very interesting that the way of checking the coins in Spain seems to have differed from the use in other parts of Europe. In the rest of Europe, a coinweight typically represented the minimum legal mass a coin had to have and if the coinweight was less or equal in mass to the coin, the coin was accepted as correct. In Spain however, the coinweight had the same mass as the coin should have in theory when minted. Checking of coins proceeded this way: a certain quantity of grains (granos in Spanish) was allowed to be added to the coin, how many was described each time on the different labels. If, with these grains added, the coin has a higher mass than the coinweight or equals it, the coin is accepted as correct.

The value of gold in the different periods is given in the last sentence on most labels.

We believe strongly that the borders of the later labels are different for the different makers, and in cases where the names are mentioned that can be proven. We have also the impression that the borders may have changed with a changing decade, which we found for Narcisco Cristia.

The makers and verifiers; their personal marks and some special boxes

The following families[7] are known to have been makers of coin scale boxes, and in many cases were also verifiers for Barcelona and Catalonia. To show the known working dates, proved by boxes and other sources, the Table in figure 18 should be used.

The Roig family

The family can be found early (14th century) in the history of Barcelona. In the 16th century a Roig is mentioned as a member of the council of the Viceroy of Catalonia.

The first verifier mentioned is Juan Roig, nominated in 1621. Besides coin scale boxes, we found one trade balance with a multitude of verification marks for years identified by one, two or four numbers, covering more than a hundred years of use.

Carrer del regomi is a street that still exists in Barcelona about 500m from the old cathedral in the direction of the port.

Juan Roig	We do not know if during this period personal marks were already used.
Joseph Roig, carrer del regomi	It is not proved that the father used the same mark as the son did; Pironti seems to show a different one.
Gaspar Roig, carrer del regomi	

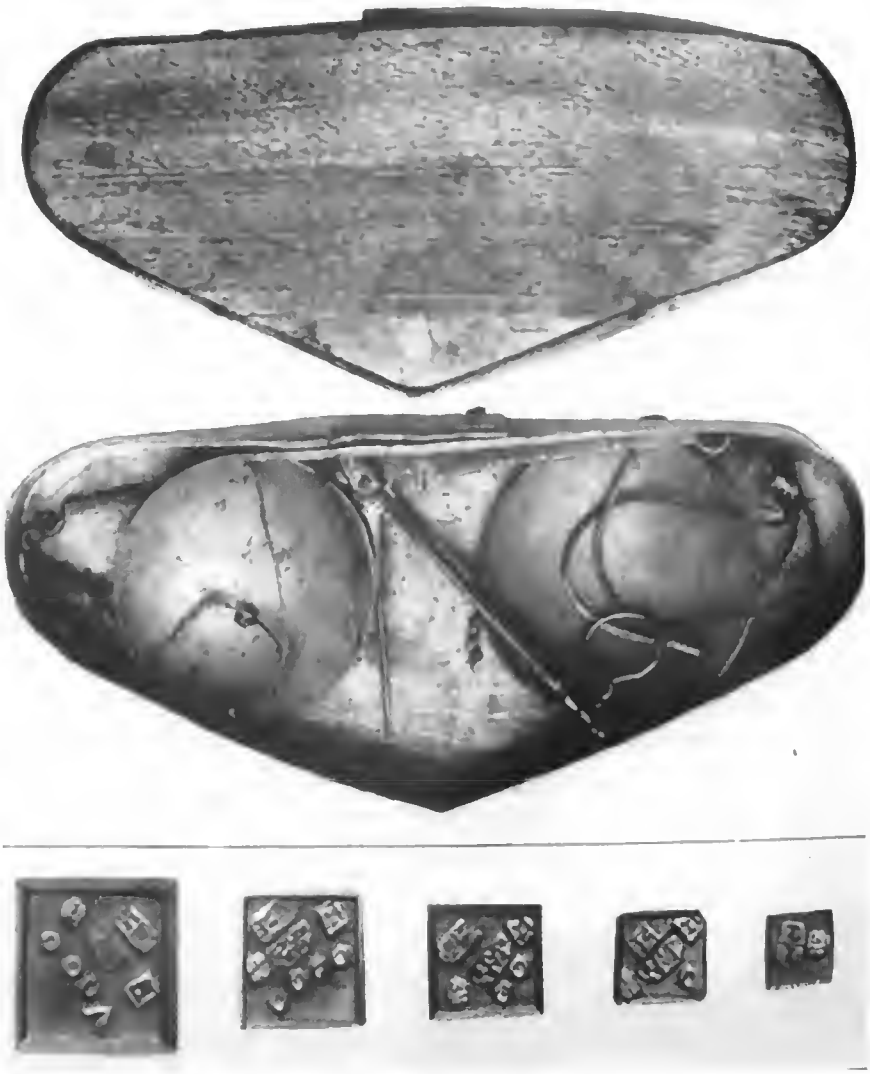
The Crusats family

The son was nominated on 2.9.1723 as verifier and was said to have followed his father. He was confirmed by the king again in 1733, although he was not a silversmith, which were by Castillian law the ones to verify the weights. We do not know whether the Crusats were related to the Barbara family who lived in the same street, and followed the Crusats' son as verifiers.

Of Juan Crusats (the son) we know of one nice box made in 1738 from solid wood, having only four coin-weights. The box seems to have been used till at least 1880, shown by the added reference to coins minted for Alfonso XII (1874-1885).

Ioan Crusats, placa del oli	It is not proven if the father used the same mark as the son did, but most likely.
Ioan Crusats, placa del oli	

Figure 12. ≺≺ Box made by IOAN CRUSATS 1738, with only four weights.



Potentially from Juan Crusats we know also a different shape of the simple box, one of only four we could find so far. Our impression is that this may not have been made for the Spanish market, but possibly for Italy. Very recently we saw three more examples, two with a very strange mixture of weights inside, of which some were clearly from Sicily, others obviously from Veneto and the rest uncertain. The third one had one weight from Veneto and one of the Catalonian type, both for Spanish coins.

Figure 13. ≺≺ Alternative shape of the common boxes – all weights have the mark CRU/SAT.

The Deop family

In literature there remains a lot of confusion about the working dates of the two Eudalt Deops who are known. From the fact that only the son seems to have worked also as verifier, we decided to propose the split between the two as shown in the Table at the end of the article. One more indication we have is the obvious change of address. On the other hand we have no real explanation as to why we have no evidence in the later 1730s and in the 1740s of Eudalt at carrer del regomi. The family was most probably related to Narcis Christia (y Deop) and was active over a long period in Barcelona as locksmiths.

Eudalt Deop, carrer del regomi	
Eudalt Deop, placa del oli	

The Barbara family

Although we can prove only two generations of this family in this business, there is an astonishing quantity of coinweights bearing the mark BAR/BARA, both used contemporaneously, but also in boxes made obviously in later times.

Of Francisco we have evidence of one box and Lavagne[8] seems to mention another one.

More boxes are known for Manuel. We own four, and there is more evidence. The weights were marked always in a very complete way. Nearly all silk cords used by him were green.

We would not be surprised if finally we find out that they were related to the Farriols family. The marks look similar and with all Barbaras and all Farriols we found the mark "F" on weights and pans.

Francisco Barbara, placa de oli	
Manuel Barbara, placa del oli	

Gaspar Oller

This family also can be found by the 14th century in Barcelona. We have no indication that Gaspar Oller worked also as verifier, even though we know that he marked pieces with his name. Besides our knowledge from boxes, he was mentioned in literature[9] in 1771 as "maestro cerrajero" (master locksmith) and maker of scales and balances as well as horses' bits, stirrups and spurs. The family appears through the middle of the 19th century.

Gaspar Oller, carrer del regomi	 10

The Farriols family

This is the family that can be followed for the longest period of activities with coin scale boxes (and historically also probably back to 14th century, with slightly different spelling). We have evidence from 1782 till 1890, covering five generations. Sometimes the name was also written Ferriols, perhaps an indication that their work was do with iron (ferro). The family is said to have been important for industrial development in Catalonia.

A Baltasar Farriols was listed as a locksmith in the books e.g. in 1857, but not as official verifier, while on the other hand we have evidence from his boxes. We are not sure what that means.

Ramon Farriols, placa del oli	
Josef Farriols[11]	
Baltasar Farriols, placa del oli	
Pere Farriols	
Jose Farriols, placa del oli	

Figure 14. ≺≺ Placa del Oli[12] shown here in 1908, where several of the families lived and worked

Narcisco Christia

His full name seems to be Narciso Christia y Deop, already showing the intermarriage with one of the families represented here. Spanish family names are composed of the names deriving from father and mother combined by "y" (and). He married a widow who brought a son into the family, named José Surroca.

Narcisco Cristia, placa del Oli	CRIS TIA plus e.g. SS

Of him we know one very special box with coinweights of a quite unusual form for Catalonia with a beam which can be folded. Four of the five weights and the scale have his mark. Is that folding scale from Catalonia or is it from Nürnberg as some collectors think?

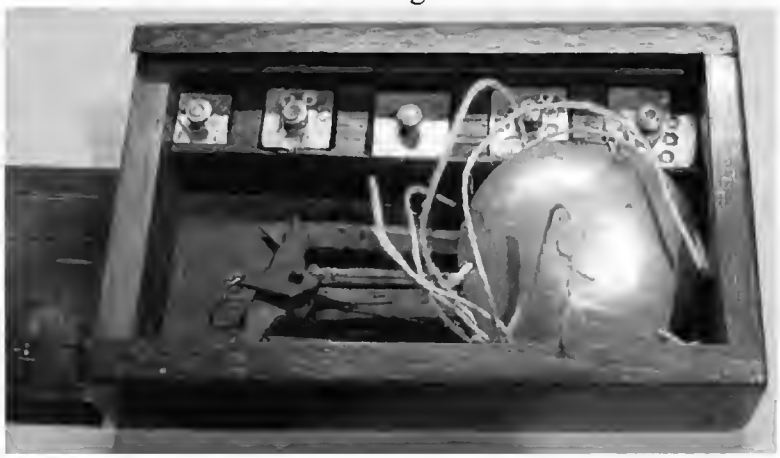


Figure 15. ≺≺ Folded scale and very unusual box – four of weights with the mark CRIS/TIA.

Luciano Lletjos

His factory was founded before 1860, as we know from invoices. He became a master in 1867 and by 1871 he called himself 'afinador' and did so again in 1888. In 1896 he was still active but by 1900 the company had changed to his sons. The company existed in Barcelona for several more decades.

We know one coin scale box made by him and some metric brass weights with knobs.

Interestingly, we came into contact with the family, who are collecting information about their history, from whom we received further information and pictures of large balances.

Luciano Lletjos y Serabasa, calle de la princesa, 14	We do not know a mark on a coin scale or – weight by him. The following is taken from a large balance[13]. LLETJOS BAR AFINADOR 1871

The time with more than two verifiers[14]

In earlier times, two verifiers worked in parallel. This seems to have been changed by a local decree at the latest in 1848, when we can find a list with five official verifiers. We have seen several such lists in our research material (Pironti) and via Google books, based on official publications of the city of Barcelona. The following table is a compilation of those verifiers mentioned in the lists.

José Surroca, calle Graciamat, 6; romaner	48 S
Tomás Rosal, calle Purta Nuova, 36; cerrajero. Other addresses mentioned; probably the most important maker on an industrial level.	TOMAS ROSAL T ROSAL 4 R
Luis Gidernet, calle Mediana de San Pedro, 39	?
Antonio Canals, calle Riera baja, 20; later calle Carmen 55	ANTON CANALS AC 53
Jil Gorba, calle S. Francisco, 24, Bta	?
Antonio Armangue, calle Basea, 13	?
Vicente Ricarts	?

Figure 16. ≺≺ Coin scale box of Tomas Rosal before 1850.

Figure 17. ⅄⅄ Coin scale box most probably of Josep Surroca.

At least in the 19th century, annual verification was obligatory with the "marca del ano" (mark of the year), as can be found in compilations of the local legislation.

At the latest after 1850, the making of weights and measures was entirely unregulated, whereas before, it was probably a monopoly of the Guild of locksmiths.

Tomas Rosal, Antonio Armangue and probably others also made coin scale boxes of a type looking like a half oval. The boxes from the late 19th century have, most of the time, six places for coinweights following the addition of the new 5 duro coin under Isabella II. Several variations exist.

Acknowledgments:

The authors want to thank Gary Batz and Guido Zavattoni for helpful comments and the possibility to use their photos.

We leave open the option to write an article about the different coinweights during that period, as our comments are abbreviated here. If we wrote in detail, this article would be too long.

Notes & References:

1. EQM, issue 2, 2012, pp 3799-3809.
2. Coins with masses between 3 and 3,5 g.
3. M. Crusafont i Sabater, *Pesals Monetaris de la Corona Catalanoaragonesa*, Barcelona, 1999. Only 500 copies seem to have been printed. Major parts of the book are visible via Google books. It is written in Catalan.
4. *Real Cedula con los veinte y cinco capitulos de las ordenanzas que su Magestad..... a todas las platerias, y plateros ....dada an san Ildefonso a 17. de Julio de 1733* where explicitely the duty is confirmed for Juan Cruzats.
5. Juanjo Romero Marín, *La Construccion de La Cultura Del Oficio Durante La Industrializacion*, Barcelona 1814-1860, Barcelona 2005. For example, Narcisco Christiá Deop was the stepfather of José Surroca.
6. If somebody is able to explain this quite strange sentence, we offer a serious bottle of red wine.
7. Mateu y Llopis and Lavagne mention a few further names. Our research could not confirm them, there is not a single coin scale box or coinweight which can be proven to be of e.g. Pablo Villalonga etc. Crusafont comes to the same conclusion, that these persons were "ensayadores" (verifiers of precious metals and coins thereof) instead.
8. F.G.Lavagne, *Balanciers, Etalonneurs leurs marques – leurs poincons*, Montpellier 1981.
9. Doctor Jordi Nadal, *La industrialització i el desenvolupament economic d'Espanya I+II*, Barcelona 1999, p. 828.
10. Lavagne shows a mark OL/LER of which we have no proof.
11. He is mentioned in Crusafont's book, but also in *Tratado de las monedas labradas en el principado de Cataluna con instrumentos justificativos*, Dr. Josef Salat, Barcelona 1818. We have not seen any box made by him, but the way Crusafont describes his evidence it looks as if he had or had seen three.
12. Placa del Oli does not exist anymore in Barcelona today. It was near the old cathedral.
13. Thanks to the Lletjos family for sharing their information with us.
14. Pironti papers: Ernesto Pironti was an antiquity seller from Barcelona who made notes about verifiers and makers, copies are in our hands thanks to Dirk Schmitz a collector from Wesel in Germany. Pironti noted the content of two local decrees from Barcelona from 1848 and 1867. Similar information was found in books listing professions in Barcelona of the same decades.

TABLE OF BARCELONA SCALE VERIFIERS & MAKERS

Years	1700	05	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	1800	05	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90
Verifier and Maker																																							
Only Maker																																							
Roig, Joseph	1701		10																																				
Crusats, Juan			13		23																																		
Crusats, Juan (Fil)					23					48																													
Roig, Gaspar					23	29																																	
Deop, Eudalt							30	?	?	?	51	59																											
Barbara, Francisco							33	38																															
Barbara, Manuel											51					76																							
Oller, Gaspar											54				71																								
Deop, Eudalt (Fil)														66		78																							
Farriols Ramon																		82				09																	
Farriols, Joseph																								15	23														
Cristia, Narcisco																								17					?										
Farriols, Baltasar																										29						55							
Gidernet, Lluis																														48					67				
Ricarts, Vicente																														48	53								
Jorba, Gil																																		63	67				
Surroca, Jose																														48					67				
Rosal, Tomás																													44						69				
Canals, Anton																														48					67				
Armanguc, Antonio																																		63	67				
Farriols, Pere																																							
Farriols, Jose																																			74				90
Lletjos, Luciano																																	60						
Years	1700	05	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	1800	05	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90

Figure 18. ⅄⅄

Half a Knicker

BY JOHN KNIGHTS

In the UK, in 1926, a new law came into force to control the way in which food was sold. This reflected the changes that were being made in retailing at that time, particularly the pre-packing of basic foodstuffs. The Sale of Food Act 1926 specified that certain foods should be sold by weight, volume or number, as appropriate, required that basic foods should be pre-packed in prescribed quantities, and controlled the amount of packaging that could be included in the weight of the product.

This legislation imposed new duties on the weights and measures authorities, who had previously been mainly concerned with the accuracy of equipment, in that they now had to check the weight of packages as well. This new duty gave rise to new types of equipment which were suitable for the purpose of weighing foodstuffs.

One such item was an elegant, if somewhat chunky, piece of kit which, in time, became a feature of almost every weights and measures office in the land.

To those who care, this machine is interesting because it is an example of a 'true' roberval, unlike most others on the market. The standard model of roberval was fitted with a leg and stay mechanism which stabilised the goods and weights pan and it was essential that the stay remained parallel with the beam at all times in order that the scale remain accurate. For cheapness and convenience, the knife edge that defined the length of the leg was actually on the stay and could, in theory engage the leg plate at the wrong point which could result in minor eccentric errors. In practice it never seemed to be a problem, but the inspector's machine clearly had to be beyond reproach, so the defining knife edge was fitted to the leg. This was a more complicated arrangement, but it ensured a more theoretically correct configuration. (I'm getting bored now so I'm sure you must be!)

Because of its theoretical rectitude and high build quality, the machine achieved levels of accuracy and sensitivity not normally found in a roberval scale. Such levels would usually only be achieved by a Class C beam or a delicate berangér and the Sale of Food Scale was submitted for test to the Board of Trade, along with the balances and beams used for weight comparison. Most examples bear an array of portcullis stamps as evidence of these regular submissions

Although the scale was referred to unflatteringly as 'the coffin' because it was fitted in a heavy wooden case with carrying handles and a detachable lid, it was more often called the 'ten bob scale.' This did not refer to the purchasc price as even in the 1920s such a classy piece of equipment would have cost considerably more than 10/- (also colloquially referred to as half a knicker). The term referred instead to the extreme sensitivity of the machine in that the beam would turn to a ten shilling note dropped on the plate, which was quite remarkable in a scale with a 20 lb. weighing capacity.

Despite the undoubted quality of this scale it was, in practice, not taken out much because it was too cumbersome and heavy to carry about. It was usually more convenient for the poor assistant to grab hold of a standard Mazak trade machine, which could be readily carried in one hand while the bag of weights was carried in the other.

Thus these machines were little used and tend to survive in remarkably good condition. Ten bob scales are sometimes to be seen for sale having been, long ago, offloaded by local authorities. The example shown is one such, bearing an engraved plate showing that it once belonged to the Borough of Crewe, in the northwest of England. It is in excellent mechanical condition, despite a few scrapes and scratches to the wooden case. It still turns to ten bob, or at least its modern equivalent, a £5 note.

'H.D.L. ELLINCKHUYSEN, ROTTERDAM' Marking Variants & Retailers

BY MICHAEL FOSTER

The author in his forth-coming eBook on *Coin Scales – English Rockers and Their Markings* included listings, observations and research on a number of German, Danish, French and Dutch counterfeit gold coin detectors related to English rockers. This article covers some of the observations and research made on H.D.L. Ellinckhuysen, of Rotterdam, and his Dutch 3-coin gold and silver rockers.

The Ellinckhuysen invention was announced in a Notice in the Rotterdamsche Courant of November 19th, 1829:

Een octrooi, in dato 3 october 1829, n.° 135, voor den tijd van vijf jaren verleend aan den heer *H. D. L. Ellinckhuysen*, te Rotterdam, op de uitvinding van eene nieuwe nederlandsche gouden en zilveren munt-schaal.

This indicates that patent no. 135, issued on the 3rd of October 1829, was granted for five years to H.D.L. Ellinckhuysen, of Rotterdam, for the invention of a new Netherland gold and silver coin scale.

This new gold and silver scale is also found in the Dutch Royal patent no. 427, shown in French below, granted to H.D.L. Ellinckhuysen of Rotterdam, in 1829.

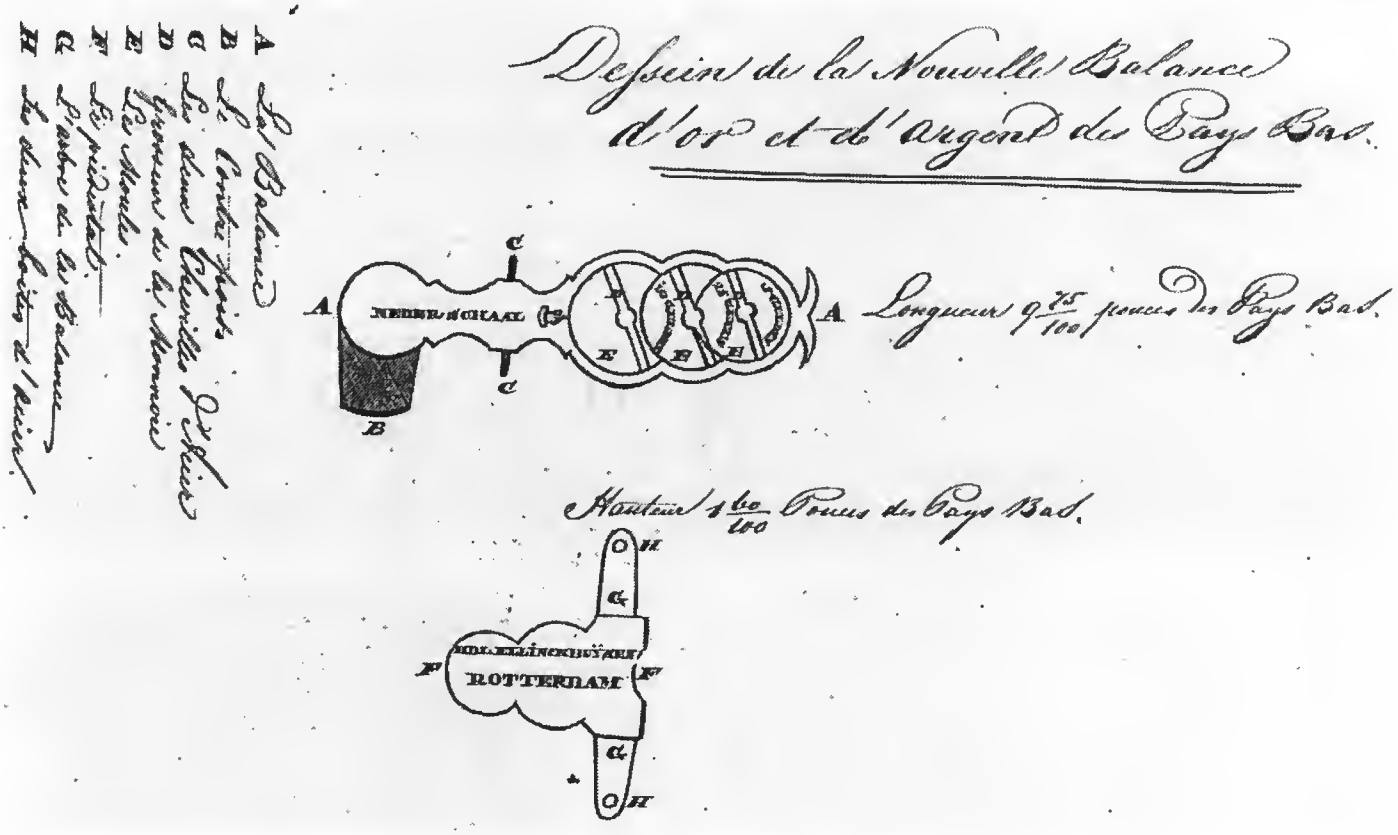


Figure 1. AA H.D.L. Ellinckhuysen Dutch Patent of 1829.

The first examples of this rocker with the markings 'NEDERL:SCHAAL' on the beam, a hand with a finger pointing to the platters, and the three platter areas with gauge slots labelled '10 GULDEN', '25 CENTS' and '5 GULDEN' are shown in the patent drawing Figure 1 above and on the following Variant 1:

Variant 1: H.D.L. Ellinckhuysen 'NEDERL:SCHAAL' 3-coin rocker

The rocker base is labelled 'H.D.L. ELLINCKHUYSEN / ROTTERDAM'.

The 'NEDERL:SCHAAL' die was perhaps too large to stamp properly as it appears to have been replaced by a three die poise- and beam-labelling Variant 2 shown below. The 'NEDERL' is on the poise with a small space then a large ':' with space then the 'SCHAAL'.

Variant 2: H.D.L. Ellinckhuysen 'NEDERL : SCHAAL' 3-coin rocker.

Unfortunately this three die combination was subject to misalignment as seen in the photo above.

A later Variant 3 of this rocker has the same beam labelling as Variant 2, but the platter area labelling of 'GULDEN / 10', 'CENTS / 25' and 'GULDEN / 5' is different from that shown in the 1829 Patent and the previous variants:

Variant 3: H.D.L. Ellinckhuysen 3-coin rocker with different platter labelling

The base style and labelling is the same on all three of these variants.

These rockers are typically found in a maroon leathered box:

and included an Instruction paper on how to use the "NEDERLANDSCHE GOUDEN EN ZILVERN MUNT-SCHAAL":

H.D.L. Ellinckhuysen "MUNT-SCHALL" Instruction Paper.

BERIGT

OMTRENT HET GEBRUIK DER

NEDERLANDSCHE GOUDEN EN ZILVEREN

MUNT-SCHAAL,

UITGEVONDEN DOOR

H. D. L. ELLINCKHUYSEN.

TE ROTTERDAM.

Op deze Schaal bevinden zich drie vormen, de eerste voor het *Gouden Tien-gulden stuk* — de tweede voor het *Zilveren Vijfentwintig-Cents stuk*, en de derde voor het *Gouden Vijf-gulden stuk.*

Wanneer men verlangt te weten of eene der genoemde muntstukken echt is, legt men hetzelve in den vorm; de Schaal zal, bijaldien het stuk echt is en de behoorlijke zwaarte heeft, gelijkelijk op den standaard balanceeren. Is het muntstuk vervalscht of van eene geheel andere compositie, dan zal dit terstond door den stand der Schaal bemerkt kunnen worden, als slaande geheel door, bijaldien het muntstuk te zwaar is, of onbeweeglijk blijvende wanneer het tegenovergestelde plaats heeft.

Om zich nog nader van de echtheid der muntstukken te overtuigen, toetse men derzelver omtrek aan den vorm, die door den naam van de spetie wordt aangewezen, terwijl de doorsnijding van dezen vorm juist de dikte aanwijst welke het getoetst wordende muntstuk hebben moet. Bij deze laatste proef is het voldoende wanneer men het muntstuk op den kant door de opening in den vorm brengt: ziet men dat hetzelve daarjuist in past, dan gebruike men geen geweld om hetzelve er geheel door te krijgen; genoegzaam is het wanneer het juist tot op de helft doorgaat.

De nuttigheid dezer uitvinding, waardoor men zich met zekerheid voor schade kan behoeden, zal algemeen erkend worden; vooral wanneer men de beknoptheid van het zamenstel dezer Schaal in aanmerking neemt; kunnende men dezelve overal zonder hinder in den zak medenemen.

Aan de belanghebbenden wordt de gelegenheid gegeven om door inteekening, tegen betaling van *vier guldens*, zich zoodanig eene Schaal, berustende in eenen *rood maroquinen koker* en voorzien van *dit berigt* omtrent het gebruik, aan te schaffen; — zijnde de prijs buiten inteekening op *Vijf Guldens* bepaald.

Deze Muntschalen zijn verkrijgbaar gesteld

The Instruction Paper also states that the scale is so small that it is easy to put it in your pocket and that it is possible to buy this scale in a red maroon leather case, provided with the instruction paper, by pre-ordering it for four guilders. Without the pre-order it would cost five guilders.

At introduction, the Ellinckhuysen rocker could be used in the Northern and Southern Netherlands, but when the Southern region (Belgium) revolted in 1831, they introduced their own currency. The Ellinckhuysen rocker was not used in Belgium. This would have greatly decreased the market size for the rocker after 1831.

A search of Dutch newspapers of the time at the Royal Library of The Netherlands (http://kranten.kb.nl) using "MUNT-SCHAAL" and the name "H.D.L. Ellinckhuysen" by Ritzo Holtman and the author produced advertisements in 1830 by Provincial retailers of the Ellinckhuysen rocker.

An advertisement by bookseller and publisher, J.J. Tijl of Zwolle, province of Overijssel offering Ellinckhuysen's patented "MUNT-SCHAAL" for four guilders "bij inteekening" that is by placing your name on a list, taken from the Overijsselsche Courant of February 26th, March 16th and May 7th, 1830:

Geoctroijeerde nieuwe NEDERLANDSCHE GOUDEN en ZILVEREN MUNT-SCHAAL, uitgevonden door *H. D. L. ELLINKHUISEN*, te *Rotterdam*, op welke zich drie vormen bevinden, de eerste voor het *Gouden Tien-gulden ſtuk.* — de tweede voor het *Zilveren Vijf-en-twintig-Cents ſtuk* en de derde voor het *Gouden Vijf-gulden ſtuk.*

De prijs daarvan is bij inteekening *f* 4 gulden; zijnde de Schaal in eenen Maroquinen Koker vervat, met een uitvoerig bericht, bij den Boekverkooper J. J. TIJL te bekomen.

Another advertisement by bookseller and publisher, J. Oomkens of Groningen, province of Groningen with a similar offering taken from the Groninger Courant of August 27th and September 3rd, 1830:

*** De *Koninklijke Geoctrooijeerde* NIEUWE NEDERLANDSCHE GOUDEN en ZILVEREN MUNTSCHAAL, waarop men, zonder gebruik van Gewigt, de *Gouden* 10 en 5 *Guldens* en de *Zilveren* 25 *Cents-Stukken* zeer naauwkeurig in een oogenblik kan wegen, de Valschen van de Echten kan onderscheiden, en deze Schaal overal in den Zak kan medenemen, zijn te bekomen, à *f* 4 — 00, bij J. OOMKENS, Jz., ten huize van den *Boekverkooper* J. OOMKENS, te *Groningen.*

It appears that Ellinckhuysen used at least two "Provincial" retailers who advertised his rockers for a period of time in 1830. The use of retailers makes sense to help deal with potential Dutch market interest for the counterfeit coin detector outside of the Rotterdam area. The four guilder price for a pre-order is consistent with the price mentioned in the Instruction Paper for pre-ordering.

The use of retailers like booksellers and publishers to sell rockers was very common for Sovereign rocker makers in England at the time. As Ellinckhuysen used retailers, it is possible that he made a variant of his rocker that could be stamped with the name of the retailer, as was done regularly in England.

Unfortunately, no advertisements or announcements mentioning the Ellinckhuysen "MUNT-SCHAAL" have been found in searches of Dutch newspapers after 1830.

A fourth Ellinckhuysen rocker variant was reported by the author in a previous article ("An Ellinckhuysen-Style Dutch 3-Coin Rocker Balance?", *Equilibrium*, 2011 Issue No.4, pp. 3758-3761).

This Variant 4 rocker is missing the two-horn finial and is unmarked and unlabelled. It also has a different shaped beam and base.

Variant 4: Top and side view of unmarked 3-coin rocker

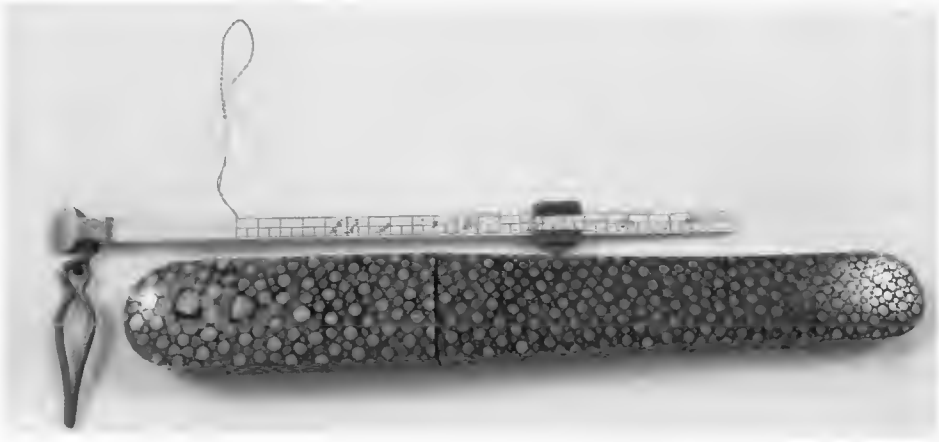
The author believes that this rocker was most likely made by Ellinckhuysen as a prototype of a new "look" version of his "MUNT-SCHAAL". It was a blank produced for retailers with the retailer labelling never added. The lack of any platter, beam or base labelling would be unusual on a British rocker unless the rocker was a prototype or made for retailers.

English rocker makers used poise, base, beam and platter marking variations as a means to identify different manufacturing lots. As there were so few Ellinckhuysen marking variants, and they were only advertised in 1830, they were most likely produced for only a short period of time, perhaps 1830 to 1831. The rarity of these 3-coin rockers and particularly the unusual Variant 4 leads one to speculate that there was only limited interest in the gold and silver rockers by Ellinckhuysen.

We can learn much by comparing the usage and need for rockers in England and the Netherlands, and we can speculate about the reliability of each country's coinage by studying these clues.

SHOWCASE

This incredibly rare coin steelyard was designed and made by Benjamin Martin who worked in London as a scientific instrument maker from 1744-1782, to weigh the guinea and its parts as well as Portugese coins. The beam is of ivory and marked *Martin Fecit No. 306.* The beam end, poise and coin clip are of brass. A separate loose poise is added when checking the largest Portugese coins. The complete instrument is contained in a green shagreen cap-end case. It was advertised in 1773, *Supply'd with a Treatiss entitled The Monied Man's Vade Mecum...Prices of the Steelyards, Brass & Ivory, 5s 3d, ditto with an Index [pointer] 5s 9d.*



See EQM pp. 269 & 299-303.

Jerry Katz Collection

Young Person Scale

BY MICHAEL ROBINSON

Or how I learned about my family connections.

"Any interesting weights for me?" I asked my friend Billy, a dealer from north of the border who had a stand at Newark Antiques Fair. "No, but are you still interested in jockey scales?" "Very much so," I replied, with which he went to his van and handed me a catalogue for an auction in two days time. "A 19th century Jockey weigh-in seat [sic] by Young & Son, Bear St, London, formerly the property of the Earl of Alisa [sic], Culzean Castle, Ayrshire, 85 cm wide," with a minute picture of a William IV oak, sit-on person scale. I immediately rang up and booked a 'phone-line for the auction.

Figure 1. ➢➢ Young & Son roberval scale with a seat. The middle plank remains stationary, and was used as a place to put weights that were not being used. Furniture experts assured me that the design of the wooden parts was typical of the period 1830-36, when William IV was king.

My bid was successful but I had to wait for three long months, as Billy agreed to collect it and deliver it to me at the following Newark fair. Figure 1. I had plenty of time to think about it. Who did I know who could tell me about the occupants of Culzean [pronounced Cul-lain] Castle?

My brother-in-law, Lord Kilmaine, seemed to have relatives scattered through a few castles, but he didn't talk about them. Would he know anything useful? I was astounded when he said that the occupants were his grand-parents; his grandfather was the Chief of Clan Kennedy, Earl of Cassilis and Marquess of Ailsa![1]

They had given the castle to the National Trust after WWII, and moved about ten miles to another family pile perched on a cliff above the Atlantic ocean, Cassilis House Castle.[2] Shortly after 2000, certain items were

Figure 2. ➢➢ The wooden frame was sturdy enough, but the use of an iron brace made the scale even more robust. This would be an advantage when the scale was trundled over rough ground like a wheelbarrow. The iron bracket has cast into the oval "Young & Son, Bear St", an address near Leicester Square, London. The single handle of the 'barrow' shows at top right, where it has been pulled up into the horizontal position. When not required, the handle hangs vertically in front of the bracket. This picture was taken after the seat had been removed, so the vertical leg of the mechanism is not in the picture.

Figure 3. ⮟⮟ When the seat was removed, the iron double beam could be seen as it lifted free of the frame. The whole linkage was made of iron, including the thin stays along the bottom of the linkage. The right-hand stay has been disconnected and has dropped at the loose end to the floor.

deemed surplus to requirements and sent to auction in Edinburgh,[3] including this person scale as Lot 494, which was bought by a dealer friend of Billy's, and subsequently put back into auction again in 2011.

I wanted to date the scale, so I went to Diana to thrash out the possibilities. She thought there were four lines of enquiry to follow, manufacturer, style, purpose and owner. The manufacturer was the easy one. See Figure 2. Young & Son were at Bear Street from 1811 until the change of name to Young, Son & Marlow in 1903, so that didn't help much in dating the scale.

Stylistically, roberval scales were invented by George Medhurst around 1815, and his trade bill of about 1819 showed wooden robervals very similar to mine. See Figure 5. Thomas Bourne Sen, and W C Day were making similar examples by 1829.

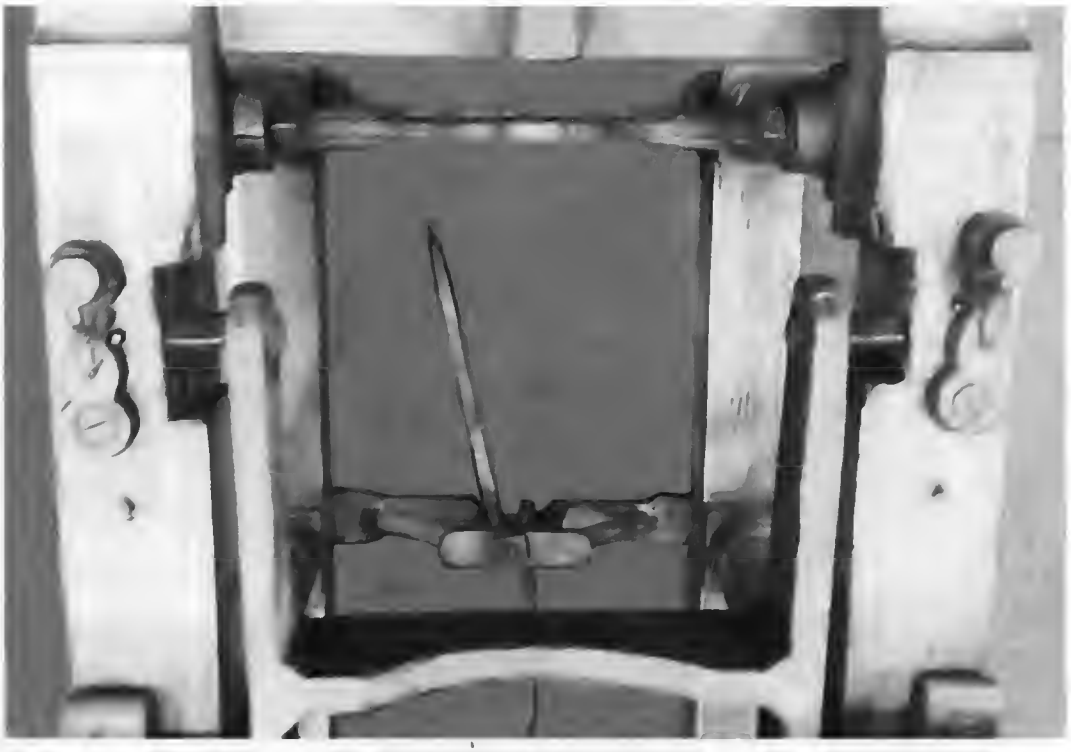


Figure 4. ➢➢ Looking down at the seat end, when the seat was off, showing the knives on the outer edge of the two beams. The seat drops onto those knives, and the vertical leg, attached to the bottom of the seat, attaches to the loose stay visible in the middle of the picture. To each side of the knives are two pads that protect the seat as it drops under the weight of the person sitting on it, and they have a second function of acting as arrestments when the scale is wheeled about, by turning under the seat, locking it in position.

Purpose? I thought that my scale might be a "one-off" adaption of a trade roberval, made for a Marquess of Ailsa as a special order. Could a Marquess have ordered an adaption from John Young? Diana brought out the 1906 Avery catalogue, Figure 6, and we laughed together over the Personal Weighing Machine for Prisons, Workhouses, Reformatories, Hospitals etc. Whoever was the intended customer for the Avery version, my Young scale was well up market, and the Marquess would not have ordered Youngs (who had a Royal Appointment, and had the symbol on the iron bracket of the scale to prove it) to make one for such a purpose. Whatever the purpose of mine, no Marquess wanted to weigh prisoners.

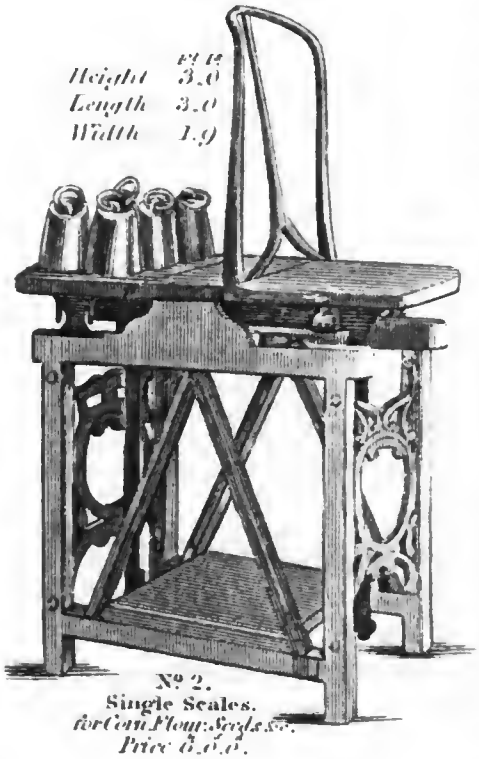


Figure 5. ➢➢ From the trade card c.1819 of "George Medhurst, inventor, patentee and manufacturer" of these scales, and of several other variations. Although this version was for corn, seeds or flour in sacks, it is easy to see how it could be adapted for weighing people. Medhurst had already designed the iron bracket and the stationary middle strip. Medhurst had also invented the wheels at one end on other versions, and put a handle centrally placed sticking out on the load side (analogous to the hinged handle used by Young.) One feature that was not retained in later versions was the flat board over the bottom stays, probably to protect them.

So another purpose? Andrew Crawforth pointed out that the person being weighed had his back to the weighing activity. He could not weigh himself. We had just eliminated the prisoners, the hospital patients and the naughty boys. To go back to the start of this adventure, the scale was sold as a jockey scale. They were the only other people who had to be weighed in front of a committee and who had to show that they had no part in the weighing process.[4] So maybe, for once, the use of the term 'jockey scale' was justified.

Then Diana dug out a tiny picture[5] showing the evidence that Lincoln race-course had used an incredibly similar one, but made by DeGrave & Co, dated 1895. Now that was more like it, a proper jockey scale! Figure 7.

Owner? Diana suggested that, being aristocrats, they would have featured in newspapers. Oh, yes, they were mentioned frequently and they

Figure 6. ➢➢ From the 1906 Avery Ltd catalogue. It is amazing how Medhurst's ideas scarcely altered in 90 years. The stationary plank, the handle to move it around, the wooden frame and the iron bracket have not changed. Only the knive-bearings of the legs and the stays altered.

made it very difficult to sort out whom was being described because there were seven Archibalds in successive generations. The third Archibald was Earl of Cassilis, and owner of race-horses so would have needed to know the weight of his jockeys. He was made Marquis of Ailsa in 1831. The fifth Archibald was a keen horseman, and enthusiastic attendee at various prestigious Races, and a member of the Caledonian Hunt, killed by a fall from his horse in 1870. The sixth Archibald gave a 50 sovereign purse for the Hurdle Stakes, a two mile race over 8 hurdles, with the horses carrying 11 stone 7 lb each, at the Ayr race-course in 1851. So he would have at least watched the jockeys being weighed and might have bought a better scale for their use on race days.[6]

Figure 7. ⮙⮙ When the owners of Lincoln Racecourse were clearing out some disused cupboards, they found the wreck of this jockey scale, made by DeGrave & Co, and dated 1895. The rear legs have lost about three inches in height, but its similarity to the Young is striking. Only three scales are recorded where the chair faces away from the weight plate.

As the owner of vast tracts of land in Ayrshire, and a keen golfer, the fifth Marquis of Ailsa, Charles was born in 1875 and was influential in starting the golf-course at Turnberry. He was a good horseman, so was he involved in the race-course at Ayr? Did he own the land on which the race-course stood? He had a yacht that he raced. How could he resist his ancestors' enthusiasm for the Turf?

Any one of the above could have been the owner, so I still can't place my jockey scale precisely, but how one scale can whisk us back into history! I am reluctant to sell this interesting person scale, but now I have almost achieved a full compliment of weights, fully 18 stone, for it.[7] I am only the temporary custodian of this unique person scale so a new home must be found for it, and I'm hoping it will give as much or more pleasure to its next owner.

Notes & References:

1. Marquess is the conventional modern spelling, but in older documents it was more commonly spelled Marquis.

2. I do not have access to google, where Diana found so much about the family, but my knowledge has been widened by reading *The Magnificent Castle of Culzean and the Kennedy Family* by Michael Moss. As with most old families, the Kennedys were a mixed bunch, who have in their distant background murder, gardening, heroic gambling, Indian Wars, game hunting, rowing, farming, sailing, financial difficulties and good taste. The financial difficulties particularly relate to the ambitious building of Culzean by Robert Adam, the famous architect, that bankrupted them. It took their cousins, American Kennedys (yes, the ancestors of the President) who inherited the castle in 1792, to get them out of that dilemma.

3. Look at http://www.shapesauctioneers.co.uk/countrysales/documents/FINALPROOF.pdf for photos and descriptions of this amazing sale. The introduction includes a first-class résumé of the Kennedy family history.

4. Through the late 17th and the 18th century, jockeys were weighed to determine which horses they could ride without damaging the horse. A four-year old horse was usually ridden by a jockey of 8 stone or less including his saddle, whip and bridle, a five-year old horse by a 9 stone jockey, and so on, up to an eight-year old horse by a 12 stone man (that is 168 lbs). The races were often long (4 miles) and might involve several heats, so the horses needed great stamina.

5. See http://www.thisislincolnshire.co.uk/Weighing-piece-history/story-11207829-detail/story.html. The dilapidated wreck was

discovered at the back of a cupboard.

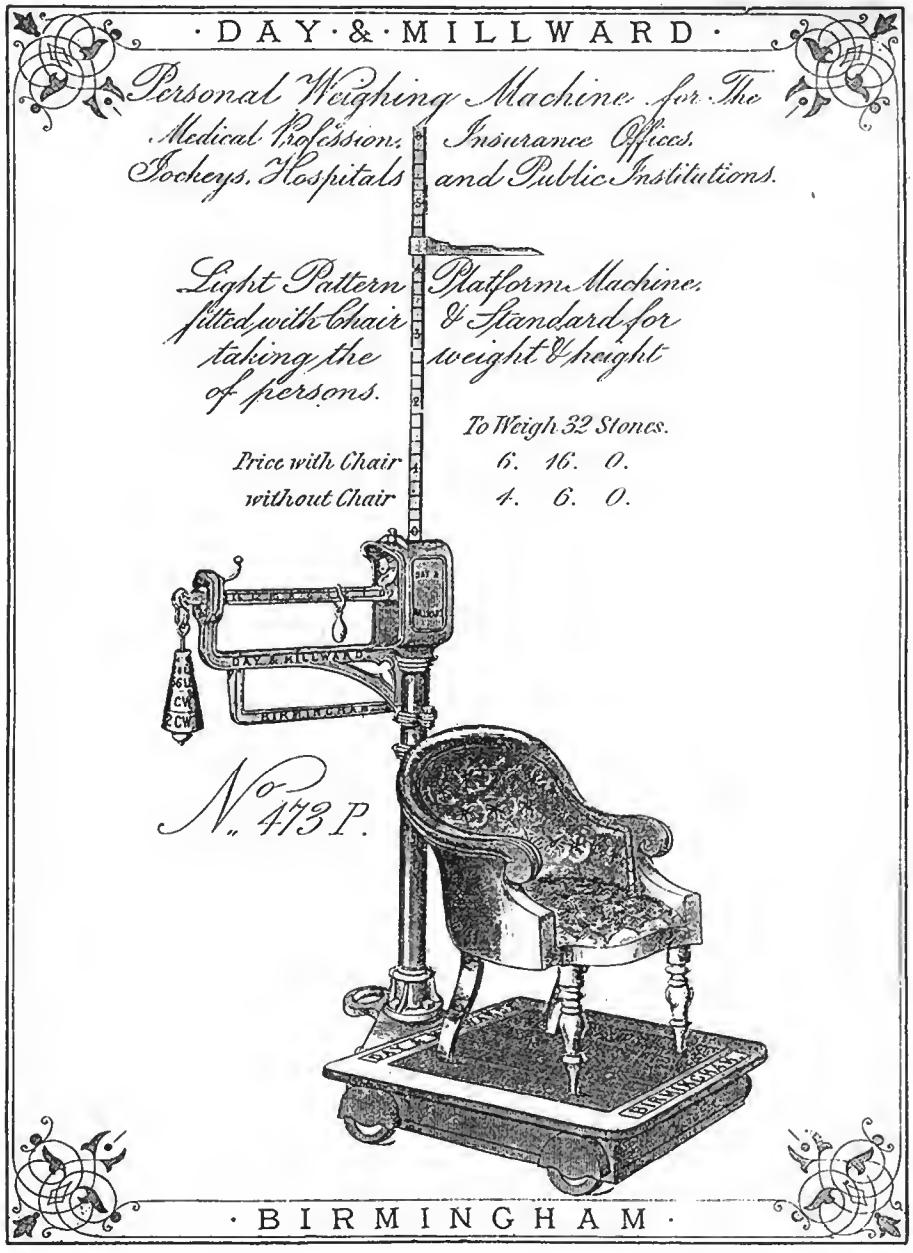
6 Race-courses were not necessarily permanent structures. Many were set up about four times a year, just for the event, and everything, including the scales, removed between meetings. There were cock-fights, dog-racing or other subsidiary attractions for the men, and Balls to attract the ladies.

7. Youngs made very unusual brass bell weights of a beautiful golden hue, with the lead in the bottom rather exposed. I have put two of these 7 lb Young brass bell weights with the scale, and added iron ring weights as shown in figure 5, the conventional type for this sort of weighing.

Another Jockey Scale by Day & Millward

Day & Millward, manufactories at Suffolk St & Ellis St, Birmingham, and office at 57 Holborn Viaduct, London. From the 1889 catalogue.

Day & Millward were in competition with W & T Avery in Birmingham. Both companies had their beginnings at the start of the 19th century, and their products were targeted at the same type of customers. When it came to person scales, Day & Millward did what so many scale companies had done since the late 1600s. They took a standard trade scale, and made it suitable for weighing persons.



The early person scales were equal-arm beams with a plate on which the jockey stood, or one pan was exchanged for a seat hung from chains. Then platform scales were invented and the person could stand on the platform (as on Merlin's scales) or a chair could be added, and the steelyard tared to allow for the weight of the chair, as with this Day & Millward. Then roberval scales were invented, and the person could sit on the plate intended originally for a sack, or the plate could be replaced by a chair, as on the Young & Son.

All these types continued to be made throughout the 19th century, and some well into the 20th century. This catalogue includes the suggestion that Insurance Offices should use them, an offer not mentioned in other companies' catalogues. Nowadays, scale companies that offer scales for insurance companies would have to double the capacity from 32 stone (448 lb.) to at least 64 stone (896 lb.).

ISASC

EQUILIBRIUM®

QUARTERLY MAGAZINE OF THE INTERNATIONAL SOCIETY OF ANTIQUE SCALE COLLECTORS

2013 ISSUE NO. 2 PAGES 3909 - 3936

Cover Picture

This counterfeit coin detector is stamped H. Maranville-Akron O-Dial Coin Tester-Pat. Apr 30 78.

The original box shown here is quite uncommon. It reads *Directions. Let us test or examine a 50 cent piece. Move the dial to the right with thumb and finger, so that the mark 50 is at the index. Place the coin on the face so that the edge touches the lip. Lined up, and it will balance as genuine. Should it appear to be larger than usual you may test the size (diameter and thickness). On left end are two scales, one side for gold and the other for silver coin, which will be readily understood. The thickness will vary in coin, owing to milling at edge. It should be tried in about three places and it will average about the mark set for each coin. Coin worn by handling will measure a trifle less. The danger is in coin measuring larger than scale indicates. The jingle should be tried in doubtful pieces which is always good in genuine coin. All other pieces of gold and silver are tested in the same way.*

Private Collection

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EQUILIBRIUM is published quarterly in February, May, August and November.

ISSN: 0893-2883

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Photos are best in 300 DPI Jpegs in a separate file with a maximum of 3 photos per Email.

Rags to Riches: 10 Beautiful Shop Beam Scales Created from Scrap Metal

BY PADDY WHYTE

My story starts in early 2012, when, on an impromptu trip, I happened upon a quantity of scrap brass in an old shop. It contained some very old scale components discarded by a scale repair company which ceased business over 60 years ago. The contents were covered with grime and dirt and almost unrecognisable. Understandably, the dealer could not see any value in such material, but I immediately recognised its potential and made my purchase.

Searching through the rubble of my new-found treasure, I was amazed to find ten brass and chrome shop counter used beams of various lengths. All of them were minus any signs of knife-edges. My mind rolled back to 1959, when as an apprentice I completed an intensive course on building and repairing similar scales for verification to weights and measures standards at Soho Foundry Birmingham. It was only shortly after that that modern equipment replaced the shop beams and the Soho tuition soon became just a memory.

Although my new purchase was a treasure of sorts, it also presented a difficult challenge. However, I was not to be deterred and the excitement of the project spurred me on. In a primitive garage/workshop at my home, I single-handedly manufactured the full 10 sets of beam knife-edges from carpenters' steel nails along with the bearings from split steel tubular rods. An enormous amount of time was spent on this work, but I never once considered packing it in.

When the groundwork was eventually completed I located a foundry and traded in a quantity of spare scrap brass. In return, the foundry created cast replica bearing boxes, pillar stands (feet), decorative pillar tops and so on. The castings were costly, but absolutely professional. Meanwhile, I made brass pillars from tubular lengths and two chrome pillars from our household Hoover extension (my good wife was not impressed!). Second-hand mahogany also came in useful when replacing missing timber bases.

Still the project was far from over. Now the long and exhaustive trail around Ireland to antique dealers to acquire approx 75% of missing scoops, plates, scoop hangers, and many miscellaneous items necessary to complete the project. Words cannot describe the extreme joy derived from assembling, balancing, testing and polishing the completed scales. After over twelve months of sheer hard work and satisfaction (and also frustration at times) that brought me back to my youthful days, I now have ten wonderful beauties to admire and add to my extensive antique collection.

Author's Biography

Paddy Whyte from Dundalk, Ireland is now in his late seventies, a retired scale mechanic and salesman, and an ISASC member.

Damping Scale Balances Over 5000 Years

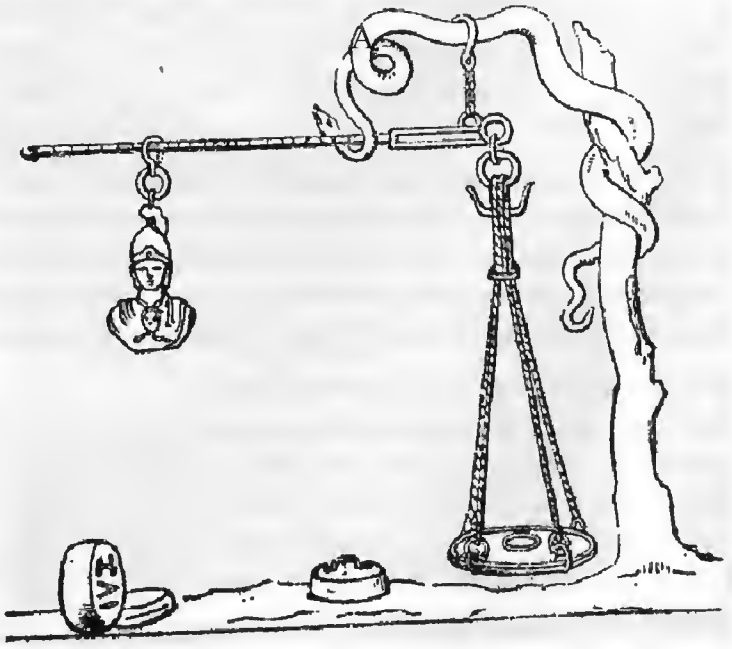
BY KURT BEYREIS

Fifty centuries ago the first equal arm balance scales were used in ancient civilizations. Since then people have been trying to speed up weighing time. An old Egyptian painting is shown in Figure 1 and depicts Anubis weighing human hearts, using his fingers as a scale damper, to help the balance reach equilibrium quickly.

Figure 1.

Until the invention of the steelyard scale in about 200 BC by both the Romans and the Chinese, only slight changes were made to balance scales. The steelyard was generally referred to as the "Roman scale" and was easier to carry and quicker to get to a final weight but generally was not as accurate. A drawing of the use of a delimiter (A) for the beam of a Roman Steelyard is illustrated in figure 2. The use of delimiters was improved over the years to further reduce weighing times.

Figure 2.



The invention of the modern analytical scale by Joseph Black in the mid 1700s was a vast improvement in both the ease and accuracy of weighing very small samples. However, due to the increase in sensitivity, a longer weighing time was also encountered, only somewhat reduced by shorter beams. For nearly 200 years, his basic design was used for analytical scales, although many improvements were introduced.

Figure 3.

Up until the late 1800s, most scientific and analytical scales used mechanical means to speed up weighing times. These included the use of a mechanical lever to raise and lower the pans to dampen the oscillation of the beam. This is shown in figure 3 where the lever is used to raise the beam from the base into the weighing position.

Another method of damping used in Europe during this time period was the use of delimiters. These included constraints to restrict the movement of the beam, pan stops to reduce the oscilliations and brushes to slow down the beam movements. However, if the brushes were not removed when the beam was nearly stopped, errors could be introduced by stopping the beam at a non-equilibrium position.

A computational method, but not very accurate, for speeding up weighing times was by averaging the +/- swings of the pointer. For example, if the pointer in figure 4 swung two units to the left and then eight units to the right, the calculated equilibrium point would be three units to the right. If each unit represented 1 mg, the weight should be adjusted by 3 mg. This method only works when the scale is in near equlibrium with small amplitude swings. In addition, several swings in both directions should be averaged to minimze errors.

Figure 4.

In the late 1800s, the most significant improvement for damping of analytical scales was to diminish their oscillations. This was accomplished by the invention of air damping by Arzberger in 1875. Brass plates were attached to the beam. As the beam moves, the brass plates move up and down inside fixed short cylinders with a slightly larger diameter than the brass plate. When the beam was oscillating at its greatest amplitude, the air in the cylinder could not quickly escape due to the tight tolerances between the plate and cylinder. The compressed air exerted a force that reduced the amplitude of the beam. When the beam attained the equilibrium point, the air in the cylinder was equalized with the outside air pressure and there was no force on the beam.

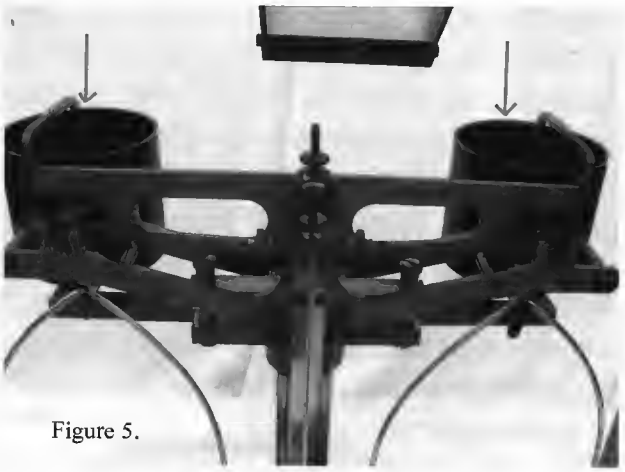


Figure 5.

The Oertling scale in figure 5 uses this type of air damping on both sides of the beam which results in maximum damping and faster weighing times.

Figure 6.

A modern air damping system is shown in Figure 6 where, instead of a plate and a cylinder, one cylinder inside of another was used. Over the next 50 years, air damping gained widespread use in European analytical scales.

The next important discovery in reducing weighing times was the discovery of magnetic damping. Before a discussion of magnetic damping, some background and review of electromagnetic effects would be appropriate.

Faraday's law of induction is a basic law of electromagnetism that predicts how a magnetic field will interact with an electric circuit to produce an electromotive force (EMF). Simply stated, when a magnetic field moves relative to a nonmagnetic conductor, eddy electric currents will be induced in the nonmagnetic conductor. This is the fundamental operating principle of transformers, inductors, and many types of electrical motors, regenerative brake systems on hybrid automobiles, generators and solenoids.

However an additional phenomenon (Lenz's Law) takes place whereby the induced eddy currents will produce a magnetic field flux that is opposite to the magnet's field and will slow the movement of the nonmagnetic conductor.

Figure 7. AA

A familiar cast aluminum version of the Exact Weight over/under scale is shown in figure 7 some of which use magnetic or oil damping. The Smith Scale Co., manufacturer of the Exact Weight Scales, was organized in 1916, for the purpose of making scales under the patents of Walter Standish Smith. Smith later changed its name to Exact Weight Scale Co. The company was in Columbus, OH and stayed in business until at least 1973, as evidenced by patents assigned to the company.

Recently, I obtained another version of an Exact Weight over/under scale that was quite different and started me on writing this article. This over/under scale shown in Figure 8 is very well made of wood and brass including a locking lever for the pan and beam and four adjustable feet with a bubble level. This scale was probably used for repeated weighings of small items of the same size in a factory or a laboratory setting. The steelyard beam is threaded and the poises are threaded nuts that can be adjusted to the proper weight. The capacity of the scale is from about 1 mg. to 10 g. As the load size of a scale reduces, the time to reach equilibrium increases dramatically. This is especially true for mechanical analytical scales which are designed to weigh fractional mgs. and therefore must minimize friction to increase sensitivity and repeatability, thereby increasing the time to get a stable reading. Other factors affecting weighing time and accuracy include air currents, temperature gradiants in the scale, magnetic fields, gravity differences and a multitude of other effects.

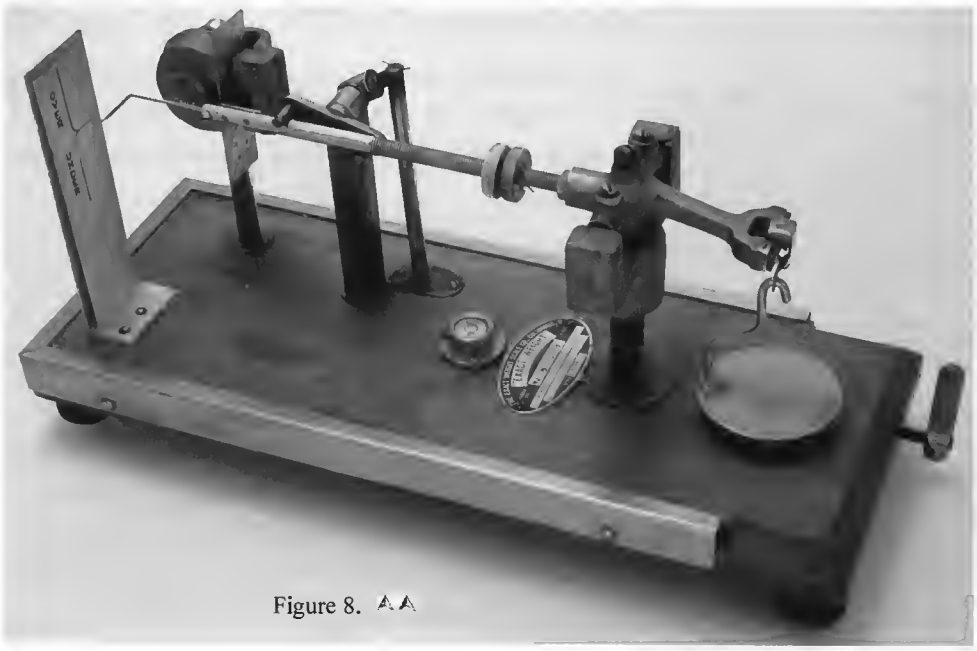


Figure 8. AA

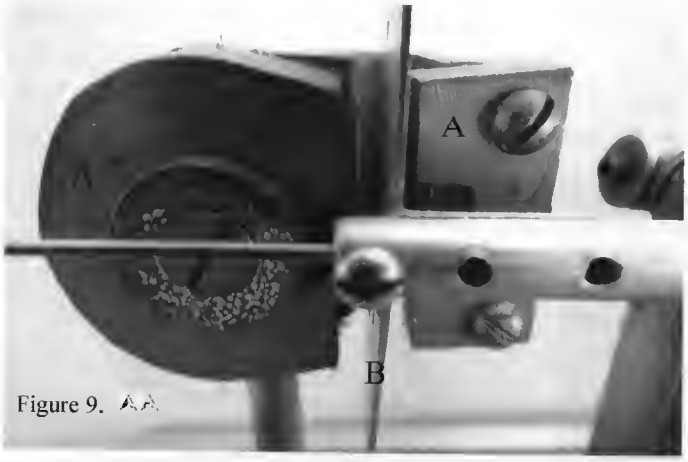


Figure 9. A.A.

The most interesting feature of the scale is the magnetic damper shown in Figure 9 where A are the magnets and B is the nonmagnetic aluminum conductor which is attached to the beam of the scale.

The net effect will be that the indicator will reach the equilibrium balance point very quickly with magnetic damping. For example, when I tested this scale with and without magnetic damping the results were very dramatic. With magnetic damping the indicator reached equilibrium in 3 seconds while, with the damping disabled it took 98 seconds to stop moving.

Magnetic damping for scales was only discovered in 1906 by W. Marek despite the fact that both Faraday's and Lenz's Laws were developed and well understood in the first half of the 19th century. By the 1930s most American manufactured analytical scales and many other scales were using magnetic damping. In the period encompassing World War II many advances were made and patented.

The European scale makers did not adopt magnetic damping to any great extent until after WWII. The main reason was that aluminum, which was mainly used as the conductor that moved through the magnetic field, often had iron impurities which could lead to erroneous results due to its magnetic properties. Additionally, in the 1800s aluminum production/extraction was very expensive, even more costly than gold.

There is an unconfirmed story that in the mid 1800s, Napoleon III, who was Napoleon Bonaparte's nephew, once invited the King of Siam to dinner. Napoleon's troops and other "less important guests" ate with silver utensils; Napoleon ate with gold utensils; the King of Siam used aluminum utensils because at that time, aluminum was the most valuable metal in the world. But, with the development of the Hall-Heroutt Process in 1886, which refined aluminum by electrolysis rather than by chemical reactions, the price of aluminum continued to drop and reached a low 15 cents per pound in WWII.

The other factor was that air damping had been in use for over 30 years before magnetic damping was applied to analytical scales. Therefore, air damping was still generally accepted as the primary damping method in Europe. By the 1930s European scale makers used air damping almost exclusively, even though high purity aluminum was available and the cost had dropped to about 20-23 cents per pound throughout most of the Great Depression.

Oil damping has been used in scales from the late 1800s. The first patent I found was issued to Dayton Computing Scale Co. By the early 1900s, oil damping was used in computing scales such as Dayton, and Angldile. In addition to damping, the oil dashpot often helped to prevent heavy loads from damaging the scale mechanism. The use of oil damping increased throughout the first half of the 20th century to include grocery, lab, school and over/under scales just to name a few. As analytical scales began to be designed to weigh smaller and smaller items, the viscosity of the oil in the dash pot interfered with the true equilibrium balance point of the scale. Therefore, air and magnetic damping became more desired by analytical chemists since there are no residual forces affecting the correct weight at equilibrium. While there are some examples (check past issues of EQM), oil is not used extensively in analytical scales.

Many scales have some type of damping:

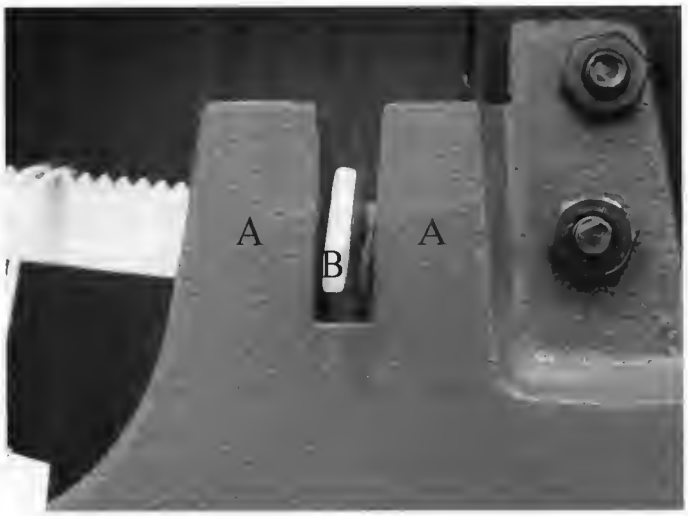
- Many reloading scales such as Redding, Lyman and RCBS used either oil or magnetic damping.

Figure 10.

Figure 10 shows oil damping in a Redding scale. I removed the beam from the fulcrum point to show the damping paddle (B) and the oil reservoir (A).

Another Redding scale model is pictured in Figure 11 and has magnctic damping. (A) is the magnet and (B) is aluminum nonmagnetic plate.

Figure 11.



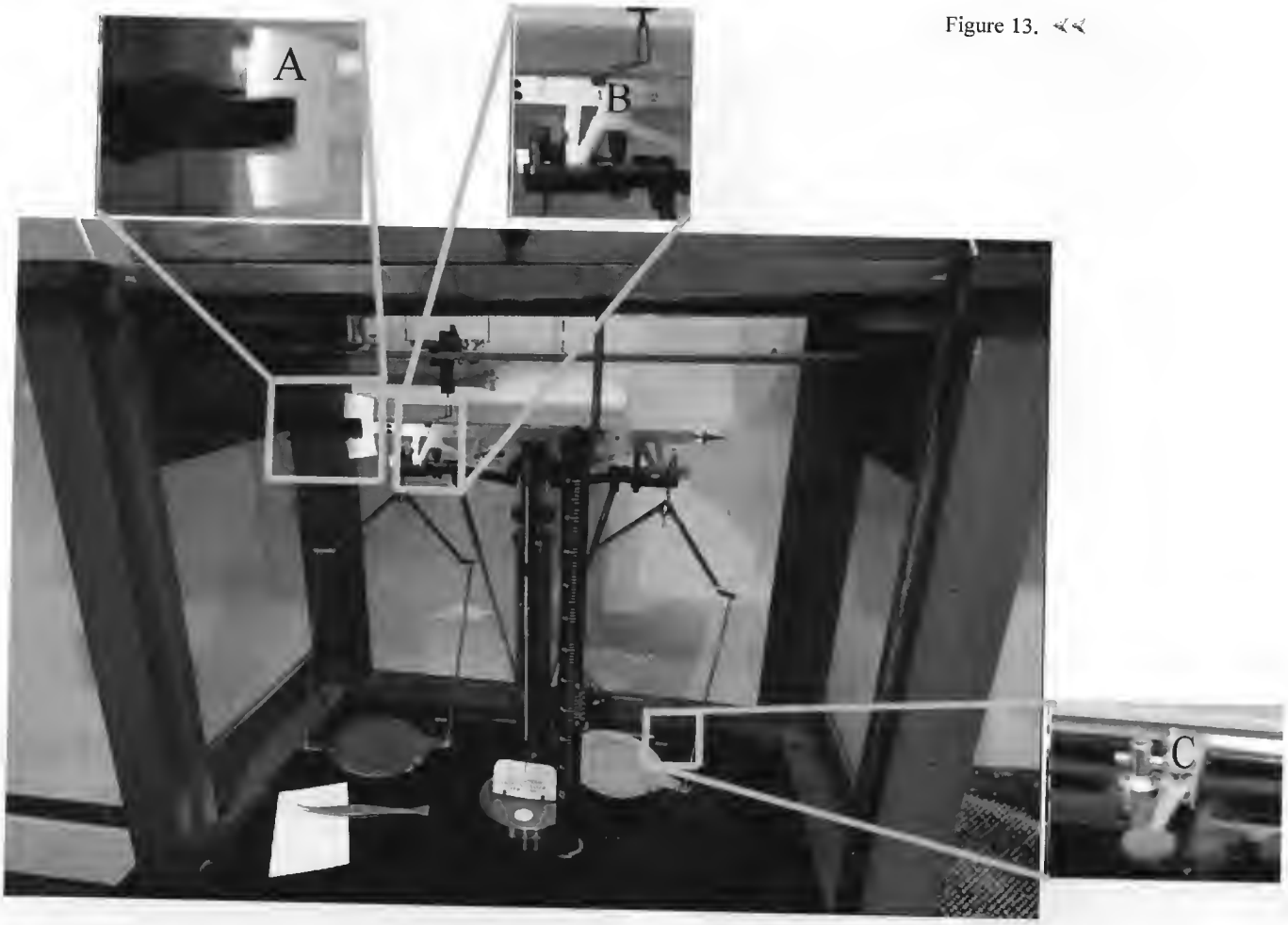
- Many candy and storc scalcs, including Dayton, Angldile and others, use oil damping.

Figure 12 shows the dashpot (A) for oil damping on an Angldile scale.

Figure 12.

• Analytical scales generally use several damping methods including beam delimiters, dry friction and pan rests in combination with air or magnetic damping. Figure 13 shows an analytical scale with three types of damping: A) Magnetic damping that can be adjusted from full damping to no damping by an adjusting button on the side of the scale; B) Adjustable delimiters that allow only a small movement of the beam; C) Pan rests that can also be used to reduce beam movement.

Figure 13.



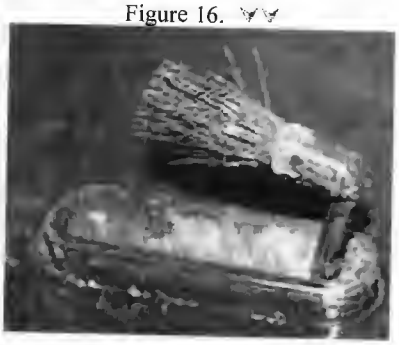
• Dry friction is not used to any great extent since it is very easy to introduce errors into the weighings if the brushes are not removed from the beam mechanism before it reaches equilibrium. The scale shown in Figure 14 uses a brush under a bulb attached to the pointer to slow down the oscillations of the beam.

The brushes shown in Figures 15 and 16 are another bulb type and a pan arrester respectively.

Figure 14.

Figure 15.

Figure 16.



- Often steelyards used in postal applications use a beam delimiter (A) since the required accuracy is only less-than and more-than multiples of ounces rather than a very precise result. (Fig17)

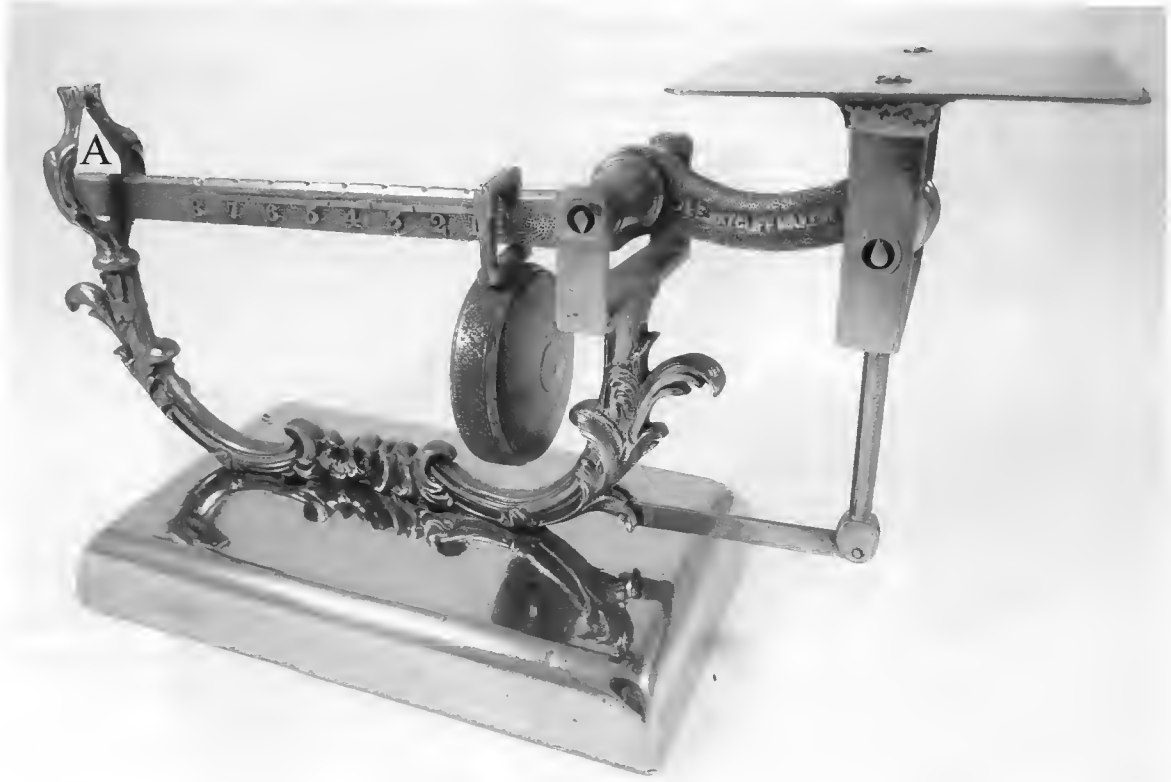


Figure 17. AA

- Many three and four beam lab scales such as Adam and Welsh use magnetic damping (Figure 18 , 19).

Figure 18. AA

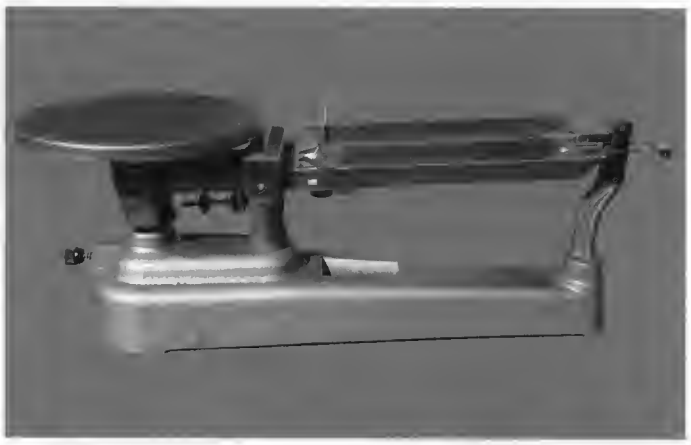


Figure 19. AA

With the advent of single pan and electronic scales in the 1950s, most scales now have fast weighing times and excellent accuracy. The need to weigh orders of magnitude smaller than one mg has resulted in new and more innovative solutions in weighing.

Acknowledgements:

I would like to thank the authors of the many articles in EQM on scale damping, who are too numerous to detail here, who helped me get on the right track to research this interesting aspect of scale mechanics. Many of the pictures came from the ISASC Museum in Pittsburgh. Other pictures include my own scales, one from the Soslau collection and some from Matt Hass's website.

An Australian Shilling Rocker from the 1930s

BY MICHAEL FOSTER

With reference to Notes & Queries No. 158 on page 3403.

Australia suffered badly during the period of the Great Depression of the 1930s. The Depression began with the Wall Street Crash of October, 1929 and rapidly spread worldwide. As in other nations, Australia suffered years of high unemployment, poverty, low profits, deflation, plunging incomes, and lost opportunities for economic growth and personal advancement..... Unemployment reached a record high of around 30% in 1932, and gross domestic product declined by 10% between 1929 and 1931.[1]

Amidst this background, the counterfeiting of silver coins in Australia by the 1930s appears to have been a cottage industry. In the 1920s and 30s Australian newspapers regularly printed articles on the discovery of counterfeits and undertook to warn the public about a variety of counterfeit coins including large numbers of 1 and 2 shilling silver coins in circulation.

Some clippings from Australia newspapers[2] illustrate the point. Figure 1 from the *Northern Star*, Lismore, New South Wales, on *Wednesday 22 July 1925*:

COUNTERFEIT COINS FOUND

SYDNEY, Tuesday.

A man named McPherson was walking in the bush near Long Bay rifle range last night when he found a tin wrapped in newspaper. The tin contained 230 counterfeit two-shilling pieces and near it was some gelignite and a fuse. An examination of the coins revealed they were made by expert counterfeiters.

Figure 1. AA

A later example Figure 2 also from the *Northern Star,* on *Monday 10 January 1927,* p.5, hinting that scales and weights were being used to identify counterfeits.

COUNTERFEIT SHILLINGS

SYDNEY, Sunday.

Counterfeit shillings were passed at Arncliffe yesterday, two local tradesmen being victimised. The counterfeits appear to be a new series and are clever imitations of the genuine article. Their main drawbacks are in weight and ring.

Figure 2. AA

A third example Figure 3 this time from the *Examiner*, Launceston, Tasmania, on *Wednesday, 7 September 1932*, p.3.

COUNTERFEIT COINING PLANT

PERTH (W.A.), Tuesday.

The police discovered a counterfeit coining plant in a disused brick kiln at Greenmount, and have arrested Stanley Dring Campion (33), clerk, on a charge of having issued counterfeit shillings. A warrant has been issued for the arrest of another man. Spurious shillings have been in circulation in metropolitan and country districts.

Figure 3. AA

In the early 1930s the Chinese were importing counterfeit shillings in large quantities as noted in Figure 4 from *The Argus*, Melbourne, Victoria, on Friday *9 September 1932*, p.7.

COUNTERFEIT SHILLINGS.

PASSED BANK OFFICIALS.

Three Chinese in Court.

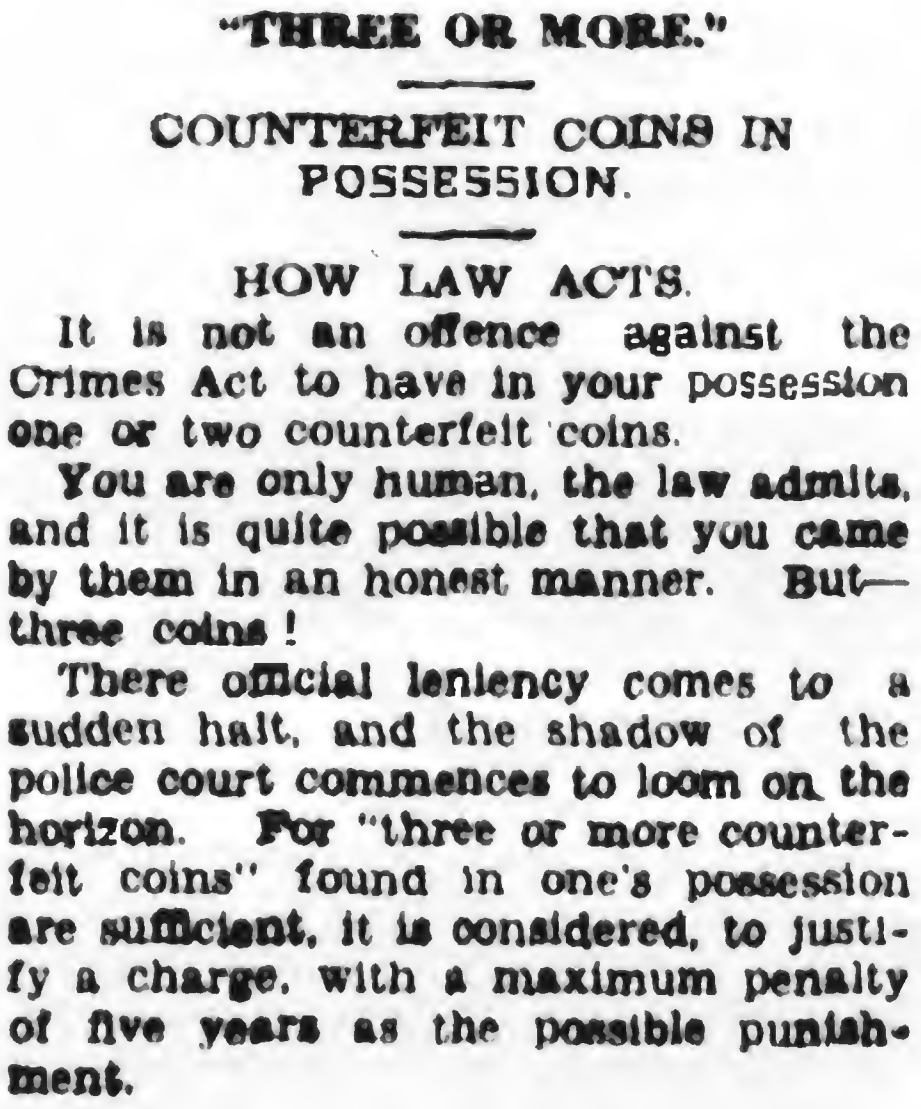
SYDNEY, Thursday. — An allegation that 10,000 counterfeit shillings were brought into Australia from Hong Kong was made to-day when three Chinese merchants, Kwong Khi-tseng, Kwong Yung-tseng, and Tseng Po-yung, were charged at the central police court with having conspired to utter counterfeit coins resembling shillings between July 10 and August 16.

Mr. Lamb, K.C. (for the prosecution) said that the counterfeit shillings were such good imitations that the Chinese defendants were able to utter them to the banks without being detected for some time. The coins, which were passed in hundreds, had been assayed. They contained 10 per cent. less silver than Australian coins.

Figure 4. AA

Why was it profitable to counterfeit Australian silver shillings? In the early thirties, an ounce of silver was worth about 1/6. Given that a shilling weighed a fifth of an ounce and contained 7.5% copper, two ounces of silver costing 3/- would be nearly enough to make eleven shillings (11/-). Even allowing for the cost of production and distribution, the profit margin on counterfeit silver coins was substantial.

The laws of Australia made possession of more than two counterfeit coins a criminal offence, as noted in Figure 5, an excerpt from an article in *The Northern Miner*, Charters Towers, Queensland, on *Monday 23 January 1933*, p.2.



"THREE OR MORE."

COUNTERFEIT COINS IN POSSESSION.

HOW LAW ACTS.

It is not an offence against the Crimes Act to have in your possession one or two counterfeit coins.

You are only human, the law admits, and it is quite possible that you came by them in an honest manner. But—three coins!

There official leniency comes to a sudden halt, and the shadow of the police court commences to loom on the horizon. For "three or more counterfeit coins" found in one's possession are sufficient, it is considered, to justify a charge, with a maximum penalty of five years as the possible punishment.

Figure 5.

The prevalence of counterfeit shillings in circulation and the laws of Australia generated public interest in an inexpensive "Counterfeit Coin Tester" to detect counterfeit shillings.

Australian silver shillings were minted from 1910 to 1966 at which time Australia changed to the decimal system. Under George V (1911-1936), the silver coin specifications were:

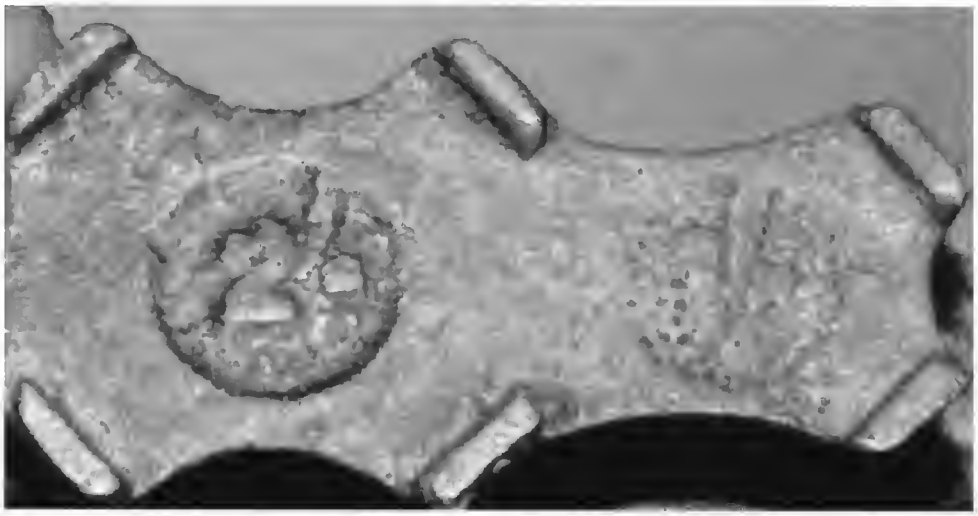
	Diameter (mm)	Thickness (mm)	Mass (gm)
Two Shilling (Florin)	28.5	~2.0	11.31
One Shilling	23.5	~1.6	5.65
Six Pence	19.0	-	2.82

At least one Australian scale-maker responded with a cast aluminum rocker introduced about 1930. The author currently has documented three known variants of the rocker for the Australian 1 and 2 shilling silver coins.

Variant 1 has a blank beam, a pivot between two columns forming part of a long base, and platters marked for '2/-'and '1/-'. No other labeling is apparent.

Variant 1: Side view.

The platter areas are defined by the casting. Cast curve notches in the platter areas assist when removing the coins.

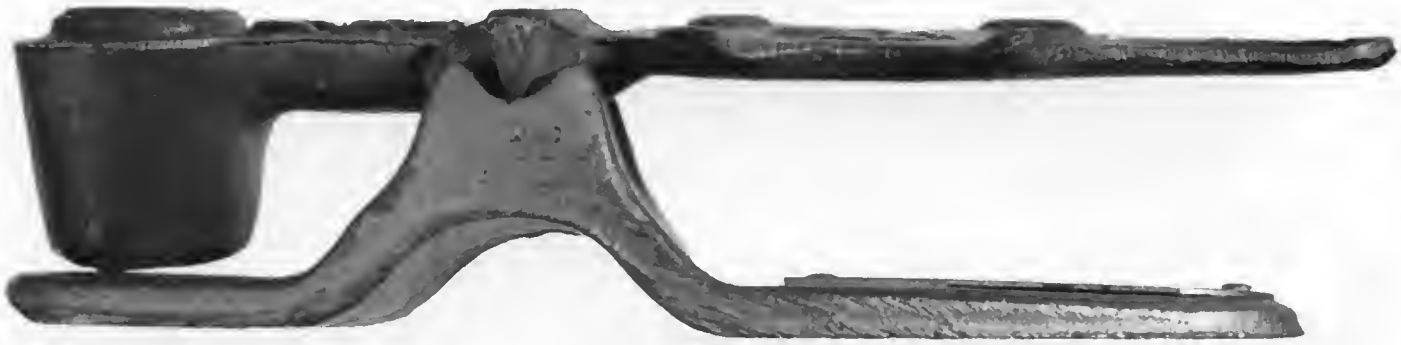


Variant 1: Platters.

A Variant 2a is shown below, with 'EXO' on the beam. The 'EXO' was most likely added to the rocker to indicate "Ex Official" which by definition is "Proceeding from office or authority". This is the same concept as the "WARRANTED" used on English Sovereign rockers by their makers to imply their manufacture under a Royal Warrant and a guarantee of accuracy.

This rocker has a knife-edge that drops into rounded pivot depressions in the two columns that are part of a shorter cast base. The base has holes to assist attachment to a counter or desk, but the beam can be removed. The platters are marked for '2/-' and '1/-' similar to Variant 1.

Variant 2a: 'EXO' Top.



Variant 2a: 'EXO' Side.

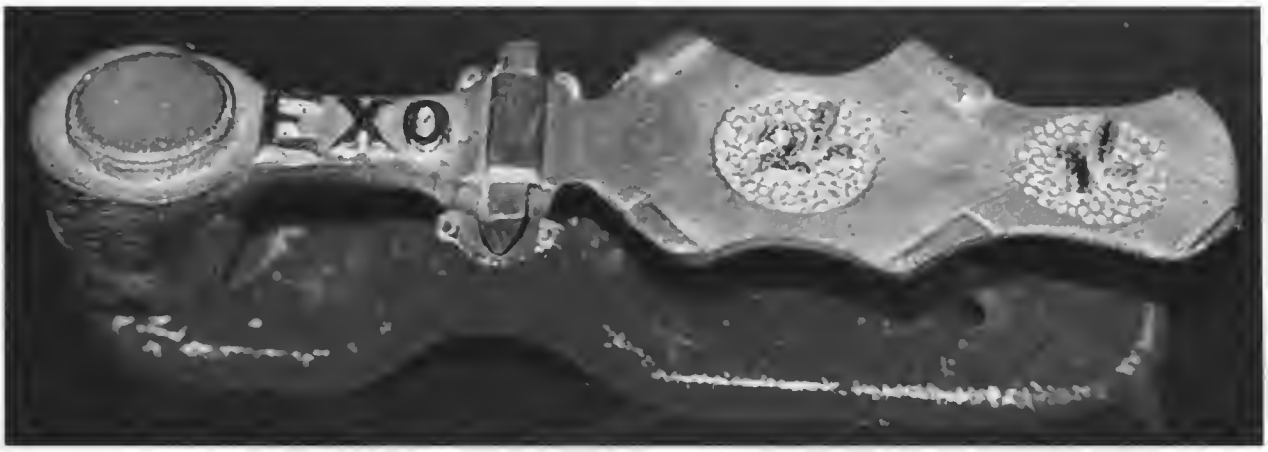
Variant 2a: 'EXO' Base with Label Plate.

The base of this example has a label plate attached that reads: "With Compliments / TOLEDO-BERKEL / PTY. LTD / MELB. & ALL STATES".

Toledo-Berkel Pty. Ltd. of Port Melbourne, Victoria made Scales and Weighing Machines from 1924 to 1952, and perhaps made this rocker. Based on the "With Compliments" on the label, they may have also used the silver "Shilling" rocker as a give-away.

The dimensions of the Variant 2a rocker are:
Beam: 103 mm long and 27 mm wide
Base: 98 mm long by 23 mm wide
Height: 24 mm.to pivot

Another example is Variant 2b with a red painted base but no label plate:



Variant 2b: 'EXO' Top.

Variant 2b: 'EXO' Side.

Variant 2b: 'EXO' Base.

The dimensions of the Variant 2b rocker are:
Beam: 105.4 mm long and 27.6 mm wide
Base: 99.3 mm long by 23.4 mm wide
Height: 27 mm to top of dome.

Searching Australian newspapers of the time for a "Counterfeit Coin Tester" one finds Figure 6, an advertisement from *The Argus*, Melbourne, Victoria, dated *7 Dec. 1931*, p.16.

COUNTERFEIT COIN TESTER, absolutely new, no opposition, splendid money-making opportunities; specialty salesmen able buy small stocks, sale or return. 20 per cent. commission.

Figure 6.

This advertisement could be from Melbourne-based Toledo-Berkel looking for "Specialty Salesmen" to resell their "Counterfeit Coin Tester" silver shilling rocker.

In February 1932, Anthony Hordern and Sons were advertising and selling the 'EXO' rocker "to guard against counterfeit coins" on sale for 1/9 in the Household Ironmongery section of their store on Pitt Street, Sydney.

Figure 7 is the Hordern advertisement showing the "2/6 Coin Testers" with 'EXO' on the beam, from *The Sydney Morning Herald*, dated *19 February 1932*, p.3.

2/6 Coin Testers

The "Exo" Counterfeit Coin Tester will detect bad shillings or two shilling pieces immediately. Guard against counterfeit coins with one of these useful machines. Price 2/6
Anthony Horderns' Sale Price each 1/9 1/9

(Household Ironmongery — Ground Floor, Pitt Street. Free Delivery City and Suburbs only)

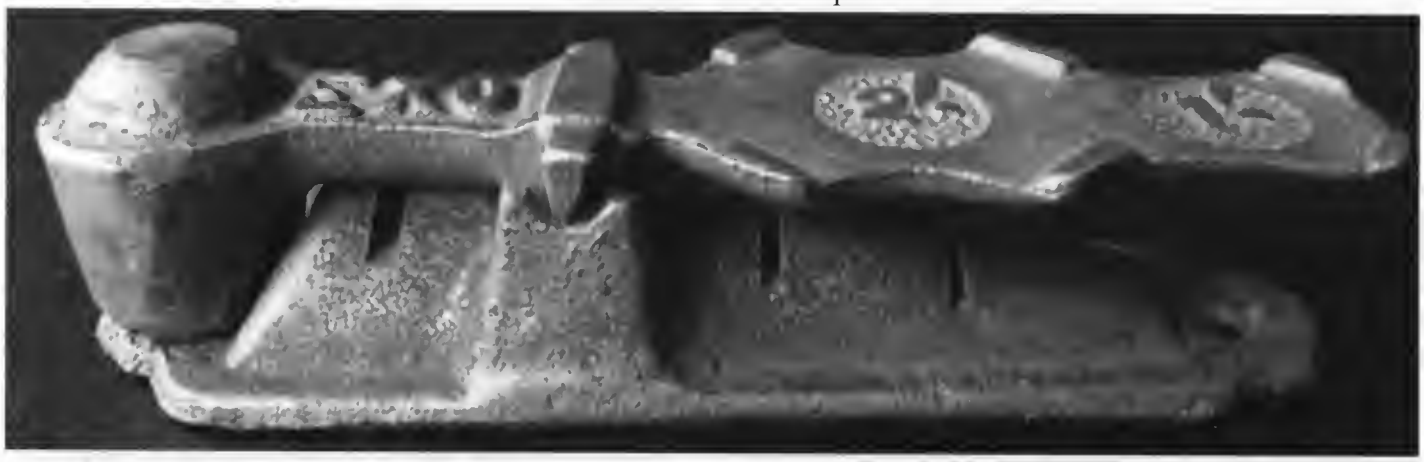
Figure 7.

Note the drop-in beam with poise and platters in the drawing above is shown reversed on the cast base from the 'EXO' Variant 2 photos.

A third variant of this rocker has three gauge slots in the base, including a slot for the Six Pence silver coin, to allow for full Counterfeit Coin Detection. These slots enabled the user to do the "Bend Test". To put the coin into the appropriate slot and attempt to bend the coin. The theory was that if the coin bent, it was made of a sub-standard alloy. As these rockers were sold in competition with a device that only did the Bend Test, the combination of the two devices was good marketing.

Variant 3 'EXO' on the beam:

Variant 3: 'EXO' Top.



Variant 3: 'EXO' Side.

Variant 3: 'EXO' Base with gauge slots.

The dimensions of the Variant 3 rocker are:
Beam: 104.6 mm long by 31.5 mm wide
Base: 104.8mm long and 31.5 mm wide
Height: 27 mm.to top of dome

Gauge slots Dimensions:
2 Shilling: Length 14 mm, Width 2.3 mm
1 Shilling: Length 13 mm, Width 1.8 mm
Six Pence: Length 13 mm, Width 1.5 mm

By 1932, Australia was beginning a long road to economic recovery that took most of the 1930s. In a 1934 advertisement, Figure 8, from *The West Australian*, Perth, dated *22 August 1934*, p.20, a Mr. Eatin of 645 Hay St., Perth was looking for salesmen to sell coin-testing scales for 2/6.

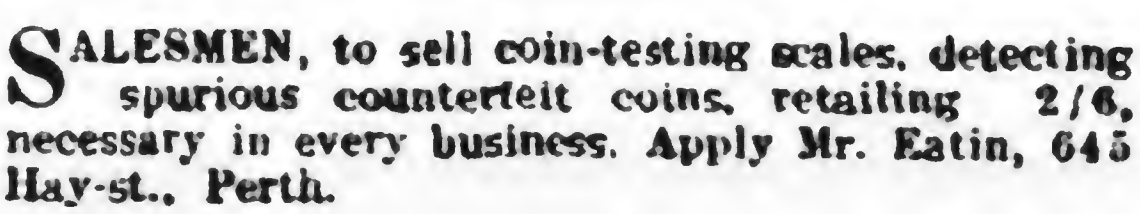

SALESMEN, to sell coin-testing scales, detecting spurious counterfeit coins, retailing 2/6, necessary in every business. Apply Mr. Eatin, 645 Hay-st., Perth.

Figure 8.


FRIDAY, 13th JANUARY, AT 10 O'CLOCK,
POST OFFICE AUCTION MART,
ADELAIDE STREET.

Trade Lines.

Player Rolls and Gramophone Records.
Wireless Sets, speakers, and accessories.
Fishing Rods and Casting Reels.
32 Cal. Remington Repeating Rifle.
220 Counterfeit Coin Detectors.
Quantity Mechanical Toys.
30 Razors.
Dress Rack.
PATENT SELF REGISTERING SERVICE SHOP.
LARGE WESTPHALIA AUTOMATIC BACON SLICER, self-feeding.
SET TORONTO COMPUTING SCALES.

Figure 9.

After 1934, the author can find no other Australian newspaper advertisements or listings mentioning coin testers like the shilling rocker. However, there are auctions like this 1933 listing in Figure 9, by Isles, Love and Company Pty. Ltd. in *The Brisbane Courier*, of Queensland, on *11 January 1933*, offering 220 "Counterfeit Coin Detectors" for sale.

This would seem to indicate that the need to check coins for counterfeits had reduced drastically, along with the beginning of the return to a normal economy and job situation in Australia.

References:

1 *Great Depression in Australia*, Wikipedia, http://en.wikipedia.org/wiki/Great_Depression_in_Australia
2 *Australian Trove* Digitised newspapers, http://trove.nla.gov.au/newspaper/

Acknowledgements:

a. Andrew Crawforth for finding the 'EXO' advertisement which started this project.
b. Vernon Denford for providing some of the photos, the rocker and gauge measurements, and checking on the silver coin specifications with Australian sources.
c. The photos of Variant 1 in this article are from the author's database of coin scales and rockers, the owner and photographer is unknown.
d. The Variant 2a rocker with the Toledo-Berkel plate is from the collection of Paul Withers.
e. The Variant 2b and 3 rockers are from the collection of Vernon and Sheila Denford.

How Many Points Would You Give the Acme Egg-Grading Scale?

BY CHARLEY AMSBAUGH

As noted in several earlier articles, the Acme Egg Grading Scale designed by Norton Chapman and manufactured by the Specialty Manufacturing Company of St. Paul, Minnesota, beginning in 1922 was produced in a wide variety of grading ranges, all of which were expressed in ounces per dozen. As a good friend has often reminded me, just when you think you've seen them all, something else comes along that you didn't even know existed. You've already guessed from the title that I must have found a new model of the Acme, haven't you? Well, you're right, but it's not a new grading range, like all the other new discoveries about the Acme. After all, we already have 13 different grading ranges, so do we really need another one?

This time, the new discovery is an adaptation of the Acme for use in egg laying contests. After I missed out on the bidding for the pre-patent model featured in EQM 2012, issue no. 3 (pg 3852), I realized I needed to pay more attention to the details and pictures in the Acme ads on eBay. My efforts were soon rewarded when an Acme Egg Grading scale with both ounces per dozen and points turned up.

Figure 1. Pacific Style Acme Scale with Points.

This particular Acme Egg Scale (Figure 1) with markings for both points and ounces per dozen was adapted from the Pacific style (18-19-20-21-22-23-24-25-26 oz. per doz.) and is the earlier model manufactured between 1922 and 1932. By comparing this scale with a Pacific style without the points markings (Figure 2), you will note that the marking on each fin for the egg's weight in ounces per dozen was replaced by the corresponding points number, and the ounces per dozen marking was moved to the far end of the fin, outside the frame. One could assume that other styles of the Acme in use in the U.S. (California, Colorado, A.P.A., and Atlantic) before 1932 also were produced with markings for both points and ounces per dozen.

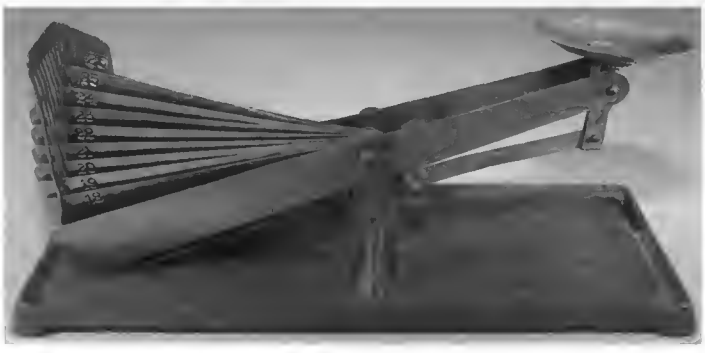


Figure 2. Pacific Style Acme Scale without Points.

Until this discovery, the Unique Egg Scale manufactured by the Specialty Manufacturing Company beginning in about 1934 and the Brower Deluxe Egg Scale made by the Brower Manufacturing Company of Quincy, Illinois, starting in about 1935, were the only two American egg scales known to be designed to show the egg's weight in points. It seems reasonable to assume that the Specialty Mfg. Co. adapted the Acme to the task of scoring egg laying contests sometime between 1924 and 1932, but only intended the adaptation to serve until it could get its Unique Egg Scale rolling off the assembly line. Since Specialty Mfg made both the Acme and the Unique, the company likely intended for the Unique Egg Scale to take over the task of scoring egg laying contests. The new version of the Acme that was rolled out at the 1933-34 Chicago Worlds Fair probably was never produced with points markings, since the Unique was, along with the Brower Deluxe, then available to answer that need.

Points were a popular way of judging American egg-laying contests beginning in the late 1920s. Egg-laying contests began in the U.S. in 1911 and gained in popularity over the years, especially in the 1930s. In the early 1930s, egg-laying contests were held in Alabama, Arizona, Arkansas, California, Colorado, Connecticut, Florida, Georgia, Illinois, Iowa, Maine, Maryland, Michigan, Mississippi, Missouri, Nebraska, New Jersey, New York, Oklahoma, Pennsylvania, South Dakota, Texas, Utah, Washington, West Virginia, and Wisconsin. Since the Unique and the Brower Deluxe were not yet in production, adding points markings to the fins of the Acme Egg Grading Scale, which had been in production since 1922, was a relatively easy way for Specialty Mfg to immediately address the poultry market's needs. One point was awarded for a 2-ounce egg, which equates to 24 ounces per dozen (oz. per doz.). Points were added for heavier eggs and subtracted for lighter eggs, according to the following system.

Point System of Scoring

Egg Weight	Score
18 oz. per doz.	. 70 points per egg
19 oz. per doz.	. 75 points per egg
20 oz. per doz.	. 80 points per egg
21 oz. per doz.	. 85 points per egg
22 oz. per doz.	. 90 points per egg
23 oz. per doz.	. 95 points per egg
24 oz. per doz.	1.00 points per egg
25 oz. per doz.	1.05 points per egg
26 oz. per doz.	1.10 points per egg
27 oz. per doz.	1.15 points per egg
28 oz. per doz.	1.20 points per egg
29 oz. per doz.	1.25 points per egg
30 oz. per doz.	1.30 points per egg

Figure 3. AA Second Generation Acme Scale - No Points.

Angling Club Scales

BY DIANA CRAWFORTH-HITCHINS

Figure 1. Angling Scale by W & T Avery Ltd, made between 1910 and 1935, capacity 4lb. The weights are exceptional in being virtually complete, with the dram weights kept in a little locker, bottom right corner. The pans are located so that neither pan needed to be detached before putting away.

Looking afresh at John Barnett's Avery Angling Scale (Figure 1) brought back memories of my youth, when I wandered along dusty roads and over hump-backed bridges in the spring. Leaning over the wall of the bridge I sometimes saw 40 or 50 men perched on collapsible stools, hunched over their fishing rods, each

Figure 2. This Angling Club fished off the coast in 1939, so usually would have weighed big fish. The one being weighed here, however, was tiny and required the adjudicators to look very carefully to avoid errors of parallax.

equally spaced along the canal, each with his bait box and his sandwich box by his feet and his catch-net in the water within reach. They were silent, intent on catching the little fishes in the muddy water. All day they sat, then assembled at dusk to weigh the contents of their catch-net. The catches were recorded in the book of the Angling Club, (see Figure 2) and prizes awarded for the heaviest catch - catches of possibly a pound or two, or maybe just a few ounces - and then the fishes were returned to the canal.

Such competitions were and are immensely popular in the UK, with about 6,000,000 anglers enjoying fishing. But you notice that I said men were fishing. See Figure 3. In the 18th and 19th century Angling Clubs were for men only, and even today, some clubs separate the Lady Anglers from the Men Anglers for competitions.

Figure 3. This engraving gives an excellent idea of the enthusiasm of men for this sport. The head-gear of the men round the table indicated that they were professional men, but the men straining for a look at the rear were working men. So the toffs ran the Club, recorded the weighs and sat on chairs. It is difficult to see, but they were using a counter roberval to weigh the fish. Note all the stuffed fish round the walls.

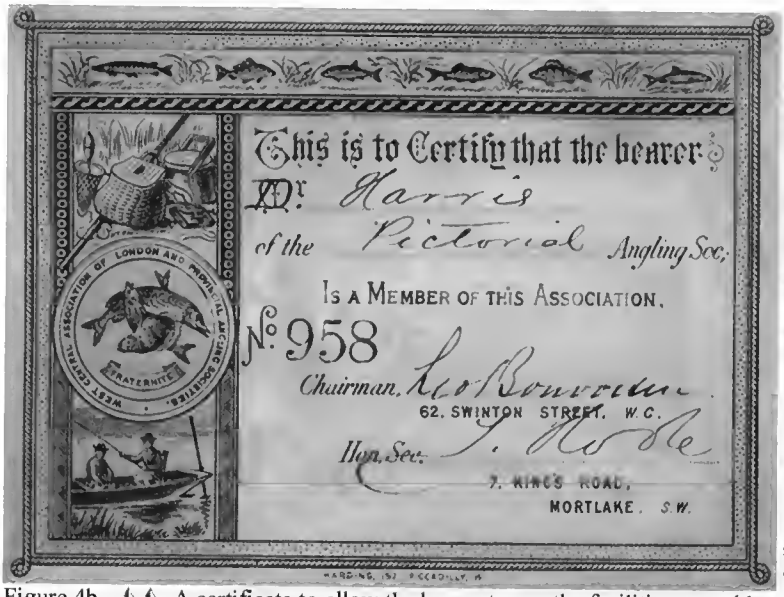


Figure 4b. A certificate to allow the bearer to use the facilities rented by the Pictorial Angling Society at the south-west edge of London. Trout would not be found in these contaminated waters in the late 19th century.

Angling Contest.—Friday being the day appointed for the angling contest for a medal given by the St. Ronan's Angling Club, Piper Angus, at an early hour, struck up the "Gathering of the Anglers," when numerous competitors appeared, from Coldstream to the head of the Tweed. After the names had been duly enrolled, they marched off towards their favourite streams; and, agreeably to the regulations of the club, returned at five, when the contents of their baskets were weighed in the presence of Earl Traquair and Mr. Hogg, when the glory of the day was declared in favour of Mr. Boyd, the club secretary, who killed with the Earl Grey or Reform Fly, 20lbs. 10oz. of splendid trout. A. Mitchelson, Esq., of Middleton, was found next in weight. For the information of anglers it may not be improper to mention that the Reform Fly, the recent design of the Ettrick Shepherd, is composed of a Grey wing, and a body same colour as the furze of the Brougham, and is found to be a killing fly in any river or rivulet in Scotland. At six the competitors, with their friends, sat down to dinner at Riddell's Inn —

Figure 4a. From the *Westmorland Gazette*, 23 June 1832. The St Ronan's Angling Club met on the border of Scotland and England. The fish caught was exclusively trout (so perhaps lesser breeds were returned to the rivers) and flies were used as lures, not worms or prepared bait. My grandfather loved fly-fishing in Scottish rivers, in his long waders, treasuring his large tin of exotically-named flies made of vivid feathers, sparkly bits of metal and shiny glass that concealed incredibly sharp hooks. As a small girl, I was not allowed to touch!

The 18th century clubs came under the Friendly Society Laws, and had to register, but men were not joining to pursue political aims, they were there to rent stretches of water, protect the fishes within those waters, and prosecute poachers. In the 18th century and 19th century, it was perfectly acceptable to kill every fish caught. See Figure 4.

So why am I going into such detail? Not only would each angler have a small personal scale but every Society or Club would have a very precise scale for use in their competitions. Avery got into the business of supplying Clubs

Figure 5. One of a pair of cone-shaped pans made of tin, 4inches (10mm) deep. Maker not known.

Figure 7. This engraving was done in 1884, and showed a more select membership, weighing their catches on an equal-arm scale on a pillar. The weights were recorded by the man in the loud check suit. The catch on the pan formed quite a heap, and another fish was about to be added.

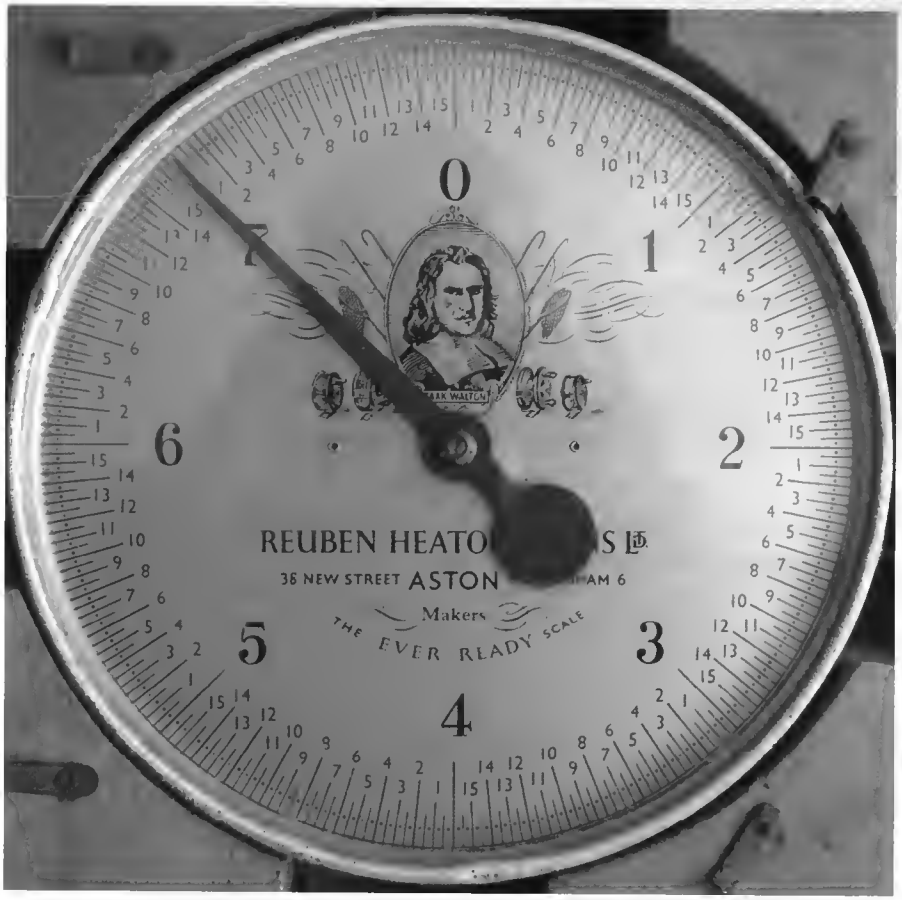
with equal-arm beams and pans with drainage holes. See Figure 6. The scale on the table in Figure 7 might be an Avery although I have never seen four chains on an Avery pan. By the late Victorian period, shortly before 1900, Avery offered the smart little beam that was in the box owned by John Barnett (Figure 1), not only with a large capacity pan, but also with a smaller round pan. See Figures 8a and 8b.

An anonymous company made a pair of deep cone-shaped pans with mesh covering the flat bottom, although there was no reason for the weights to be in such a pan. See Figure 5.

Figure 6. An early equal-arm beam stamped Avery. Date unknown but probably c.1850. The fish were prevented from escaping by the mesh cover. The initials of the fishing club are punched into the weight pan, BLC. This club has not been identified. Note the bar by which the scale is held up - a good grip when handling slippery fish.

Figures 8a & 8b. Multi-purpose beam by W & T Avery Ltd, here used for a fishing scale. The same beam was used on John Barnett's scale (Figure 1). Class C is clearly painted on the beam, but as it was not used for trade purposes, it has not been verified. The use of a balance ball on a chain was made illegal for trade in 1878 but the category Class C only came into use in 1907, so this scale dates to after 1907.

Figure 9a. ➢➢ Spring balance made by Reuben Heaton & Sons Ltd. Made after 1930. The dial, printed on aluminium, is 8½ inches (215 mm) across, giving a good read-out.



Several companies produced scales similar to John Burnett's scale (Figure 1) between the 1880s and the 1930s. I would appreciate knowing of other makers.

I was delighted to get a handsome spring balance by Reuben Heaton & Sons Ltd (see Figure 9a and 9b) with their earlier tare knob, placed at the side of the dial. Their more recent examples have the tare knob at the top, adapted from break testing units, that Heatons also manufactured. They were making fishermen's scales from 1857, but only started to make scales for Matches [Competitions] in 1930, well after the death of Reuben in 1923. The nylon net (that replaced the pan with holes in the base) was carefully made to

Figure 9b. ➢➢ The dial is calibrated in lbs & oz, to 8 lbs. Heatons moved from 38 New Street, Aston, Birmingham, to Tamworth when the area of New Street was demolished and a shopping centre built.

slide over the box, with its net that traps the fish held against the box. The net is big enough to take many fishes.

The dial was decorated with a cartouche of Izaak Walton, with ornaments of reels, rods, nets and gaffs around it. Walton was the famous author of *The Compleat Angler*, published in 1653, and never out of print since. He was an ironmonger in London for much of his life, but was passionate about angling, and spent much of his time, especially in later life, fishing with his friends.

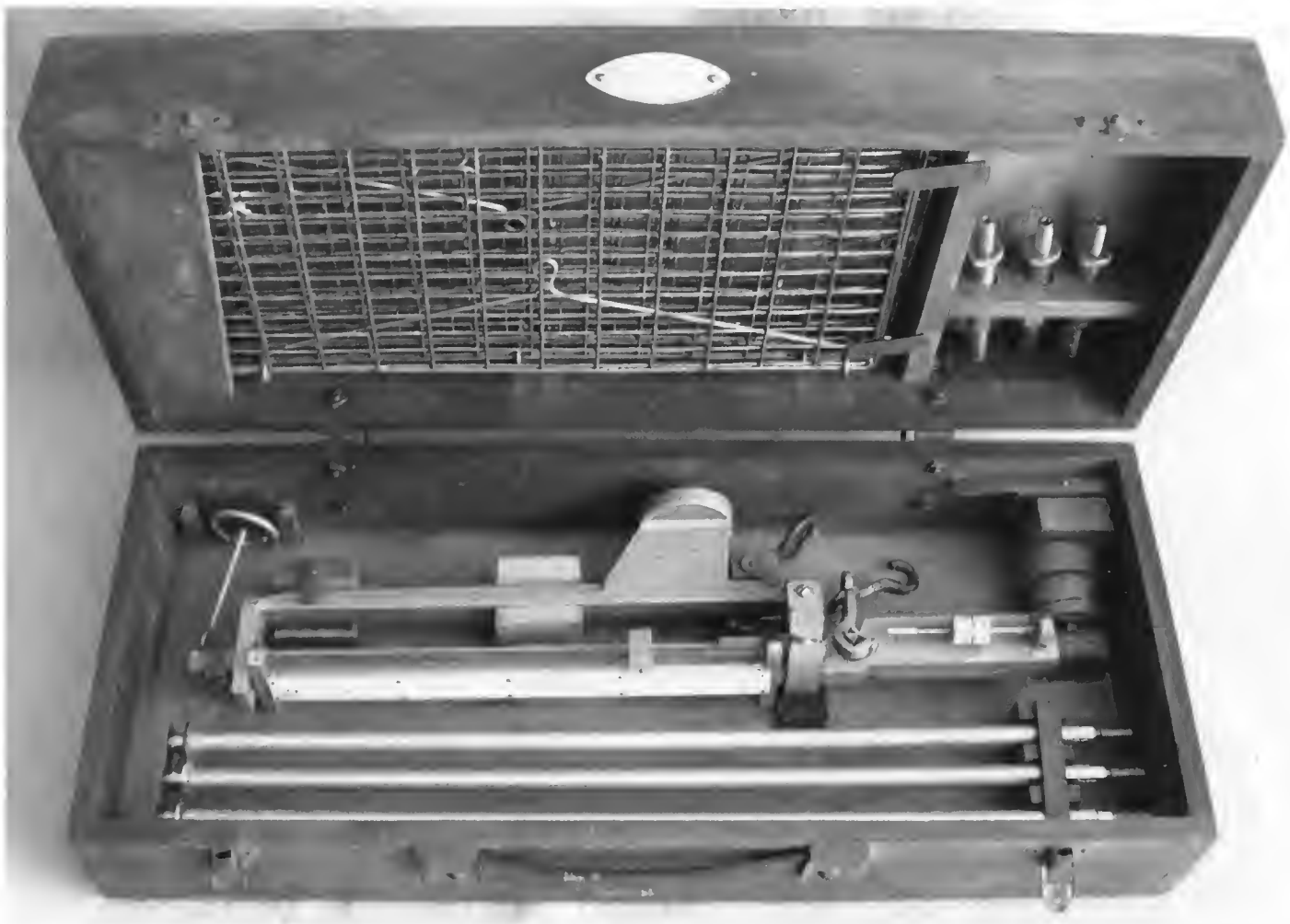


Figure 10a. The Avon Scale Co. steelyard fits tightly into a carrying box 19 inches (470mm) wide. The beam is 15½ inches (390mm) long, with graduations printed on celluloid. The plaque reads Avon Scale Co., 77 Fore Street, London N18. The company was incorporated in 1888, and eventually moved to Claremont Street, Upper Edmonton, Enfield, London N18 2RP.

Figure 10b. Although this scale is so robust, with very stable tripod legs, it is also very sensitive.

Modern anglers post rude comments on the Internet about Weighmaster spring balances, pointing out that they can be extremely inaccurate, and recommending that clubs should use an Avon instead. This Avon steelyard (figures 10a and 10b) has an anodised aluminium supporting frame, so was probably made around 1960, having been bought second-hand in 1974. The slotted proportional brass poises go up to seven pounds, and the sliding poise takes the capacity up to 8 lbs x 1 oz divisions. A small aluminium sliding poise adjusts between 1 and 16 drams, so a precise judgement can be made. The design of all parts is excellent, and they fit neatly into the box. The basket folds cunningly into the lid, and opens up easily into a cube with hooks to hold it together, without the need for any loose connecting bits. The cover of the basket lies within the basket when folded up. The tripod's 18 inch legs can be extended to 21 inches by adding the three extensions held in the right side of the lid. Below the fulcrum there is a thin flexure spring to dampen the swings of energetic live fish.

Acknowledgements:
With thanks to John Barnett for stimulating this article.

Showcase

➢➢This unmarked fish scale is 14" tall when erected. Its 9" long brass beam is graduated to 4 lbs. by 1 oz. and 16 gms. by ½ gm. The nickle plated brass pan measures 10" by 5½". The box into which it fits, for carrying, measures 11½" by 7" and is 4" high and has an inlaid measure on its top. This model was offered for sale by Charles Brecknell Ltd. in their catalog of 1936, capacity 4 lbs., price £5..10..0. They also offered an equal-arm scale with a painted beam in a wood box, with an aluminum weights' tray at £2..16..3 or in an aluminum box with an aluminum weights' tray at £3..6..0. So this example was top-of-the-range.

Kurt Beyreis Collection.

➢➢This fishing contest scale by an unknown maker is unmarked. The box, that the scale may be carried in, measures 12¼" by 18" and is 7" deep. Erected as shown, the scale measures 34" high and has two brass beams 15" long with a capacity of 16 ozs. on the front beam and 11 lbs. on the rear beam. The aluminum pan measures 16½" by 10½", is 5" deep and has holes in the bottom for water to drain out.

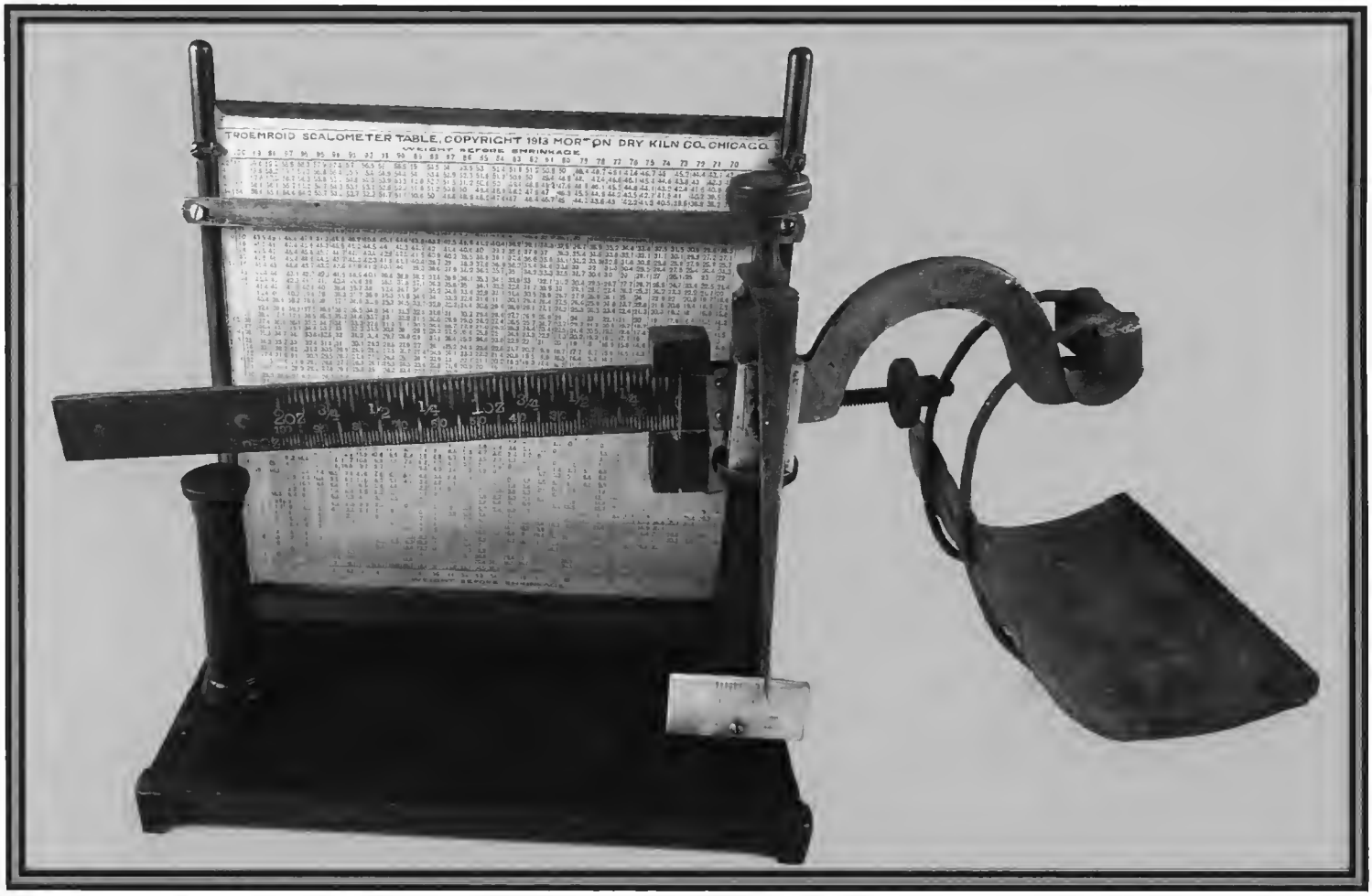
Berning Collection.

ISASC

EQUILIBRIUM®

QUARTERLY MAGAZINE OF THE INTERNATIONAL SOCIETY OF ANTIQUE SCALE COLLECTORS

2013 ISSUE NO. 3 PAGES 3937 - 3964



Cover Picture

This early Troemroid Scalometer with its flat table was manufactured by Troemner Scale Co. and is copyright 1913, by Morton Dry Kiln Co., Chicago.

The reverse explains the directions for use of the scale to test the dryness of lumber by weight. It was sold by The A. H. Andrews Co, 115-117 South Wabash Avenue, Chicago. This Troemroid Scalometer is dated five years earlier than the newer, 1918, model shown on page 3963 and is extremely rare.

Read more about lumber moisture testing scales and their use on pages 3957-3964 in this issue of *Equilibrium*.

Leslie N. Firth Collection

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ISASC
INTERNATIONAL SOCIETY OF ANTIQUE SCALE COLLECTORS

EQUILIBRIUM is published quarterly in February, May, August and November.

ISSN: 0893-2883

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Article submissions are preferred in MS Word with Times New Roman Font size 12.
Photos are best in 300 DPI Jpegs in a separate file with a maximum of 3 photos per Email.

Benjamin Payne

BY DIANA CRAWFORTH-HITCHINS

and his connections with the scalemakers William and Susannah Astill, John Partridge, James, Richard and John Ovenden, William Fage, Thomas Burchfield, Robert Wenborn, John Young and Charles Saunders

Jan Berning asked me whether I had an article fermenting just after I came across this letter (Figure 1) to the editor, written in *The Examiner*, in August, 1824. Benjamin sounded offended, unjustly attacked, irritated by the waste of his time, and even a bit spiteful, throwing aspersions of collusion between the informer and the magistrate.

HAMMERSMITH JUSTICE

Mr. EXAMINER, - Your Constant Reader has this day been summoned before the Worshipful Magistrate, Mr. Hanson, of Hammersmith, for his name being abbreviated from Benjamin Payne to 'Benjn Payne' on his Cart, and fined 20s. and 8s. 6d. Costs, for this crime, if it can be so called. Now, Mr. Examiner, I think a Magistrate should have protected a respectable individual from such a fine, seeing the name could not be mistaken for any other; but the worthy Gentleman told me he had a duty to perform, and that I must blame the Legislature. So I did - to think they should give such power. If you think it will be doing any good to give this as information to your Readers, and the Public, I am sure you will not omit so doing. I can assure you, had I have known such before, I should have saved myself the trouble of going to Hammersmith and back, as well as paying Il. 8s. 6d; for I should have wrote Benjn. Payne to a bond on my life, and have done so in banker's checks, in bonds at the Bank, Bank receipts, and all securities for money, for more than 25 years; and at last to be fined by a common Informer, under the order of the Magistrate, for having that on a cart which has done for all sorts of securities, is somewhat extraordinary! - The Informer is a short, squat flat-faced fellow, whose name is Byers, and who told me I might put his name, with the transaction if I pleased, altogether. I promised the worthy Magistrate, and the Informer, who seemed very familiar with each other, I should do so; and your insertion of this will give pleasure, and oblige your Reader from your first publication.

395, Strand, July 24, 1824. BENJN. PAYNE

Figure 1,

So what was Benjamin like? Have enough clues as to his character survived? Living so long ago, I could not expect much, but I thought I'd have a dig through the documents.

Benjamin was born in 1773 in Lower East Smithfield, London, the son of a Waterman. His father's job was risky, not only because the wherries used to ferry people across the Thames were vulnerable to the heavy wash from larger boats and too frequently sank, but also because the damp conditions on the polluted river caused lung infections in the watermen. Whatever the reason, Benjamin's father died before Benjamin was apprenticed in 1788 to William Astill, a young scale maker with two premises, 10 Butcher Row, Temple Bar and in The Strand. Astill had got a Royal Warrant in 1781, so Benjamin's mother must have thought that she'd set her boy off on a prestigious and safe future life.

Did she know that William Astill had a brother John who had been indicted for stealing stable equipment and two horses in 1782? William had been called to provide an alibi, but, explaining that he had been in bed for ten days with a violent headache [a migraine?], he did not convince the judge of his brother's innocence and his brother was found guilty, and had to raise sand and gravel from the Thames for two years. I was doubtful about the justice of this, until Court records showed that, the same year, his brother was indicted for stealing drapery and hosiery. He was found guilty, and was punished by having to raise gravel from the Thames for two years [to run concurrently?]. Then in 1784 the Old Bailey records got thoroughly confusing. They record William Astill and John Ellis being indicted for stealing leather and skins, the skins being found under the bed of John Astill, but William Astill was found guilty and condemned to death, not John. I think John stole the skins and was condemned to death, as William went on taking apprentices and running his shops in Butcher Row and the Strand.

William Astill had yet another day in Court in 1785. When William Wood, wire-worker, had 23 lb of brass chain stolen from his shop in Noble Street, William Astill was asked to state whether he could identify and swear to the workmanship of any one workman. He said, *I live in Butcher Row. I am scale maker to His Majesty. I employ six people and I cannot see any difference between one person's work and another. It is quite a common pattern, we put these to counter scales for grocers for large weights, I firmly believe that no man can safely swear to the making of this chain .....We employ chain makers out of doors [out-workers],*

they are called garret masters. They are not made in our house, there is nothing made in any scale makers in London ... I am a scale maker, not a chain maker.

So there was Benjamin's master standing on his dignity, which would perhaps have calmed Benjamin's mother. Her son was being trained in a workshop with seven men in it. But in his first year of training his master William Astill was put in prison for debt, went into a decline and died. She must have been anxious, but the widow Susannah Astill pulled things together. She was accepted by Blacksmiths' Company as a master in her own right, taking her own apprentice, and completing the training of her late husband's apprentices. She took into partnership (1790-1795) John Partridge, who had been a lodger in their house, as "Astill & Partridge", then she took King into partnership (1798-1799) as "Astill & King". (The identity of King is a problem; possibly Thomas King, trained by John Lind and freed about 1761, or the I King who made a coin scale.)

Bound to Wm Astill 1776 John Wynn
Bound to Wm Astill 1779 Thos Keys
Bound to Wm Astill 1782 Jas Nath Prickett
Bound to Wm Astill 1784 Jas Wm Newman
Bound to Wm Astill 1786 Thomas Trout
Bound to Wm Astill 1786 Wm Hyatt
Bound to Wm Astill 1788 Ben Matt Payne
Bound to Wm Astill 1788 Sam Stevenson
1790 John Saunders bound to Susannah Astill.
[Son of John Saunders, scalemaker.]
1791 Sam Dobson bound to Susannah Astill.
1795 Robert Wenborn bound to Susannah Astill.

Figure 2.

Benjamin did his training alongside Prickett, Newman, Trout and Hyatt, older apprentices, and Stevenson, Saunders, Dobson and Wenborn, younger apprentices. If Susannah kept the six workmen of her late husband, each workman would have had an apprentice to tutor. Incidentally, John Saunders, the first apprentice to be bound to Susannah, was the son of John Saunders, scalemaker. Was John senior one of her workmen?

About 1796 Benjamin Payne was freed, and within two years was taken into partnership by Susannah Astill, as "Astill & Payne". They worked together from 1798 until at least 1803, at 23 Newcastle Street, Strand. I know of only one scale made by them together, a coin scale, but presumably they worked continuously for that five years. The IGI records the marriage between Susannah Astill and Thomas Ovenden in 1798, so she became Susannah Ovenden. No trade card survives for Ovenden & Payne, so maybe she continued to work using her previous name.

Does this partnership tell us anything about the character of Benjamin? He could not have had any money to bring into the partnership so he must have struck Susannah as a reliable partner and a good scale maker.

Benjamin took his first apprentice in 1800, James Ovenden, son of Richard Ovenden, an engraver in Crown Court, Temple Bar (just along the Strand from their shop). Presumably James was a relation of Susannah's new husband, and Benjamin was asked to take him on - another hint that Benjamin was highly thought of.

The same year, Benjamin married to Mary Partridge. Was Mary the sister of John Partridge, the scale maker who was the partner of Susannah Astill from 1790-1795? It does seem likely.

He was doing nicely, with business in a very prestigious area, a wife, and by 1802, a second apprentice. In 1803 he stopped working with Susannah, who possibly retired, as no further record of her has been found. We cannot even be sure that she finished the training of her three apprentices; perhaps Benjamin took them on. Robert Wenborn, her third apprentice, was bound in 1795 but only took his freedom in 1819, (after which he could take apprentices himself) so he must have been working as a journeyman. Robert boasted that he was 'from Youngs' so he must have gone to work for John Young before he took his freedom.

Only one scale survives with the label of Benjamin Payne alone while he still worked at 23 Newcastle St near the New Church, Strand. This diamond scale (Figure 3) must date from that year, 1806. It is a classic diamond scale, except that the largest weight is for 200 carats - considerably larger than the 64 carat weight most diamond dealers needed! Because of the large weights, the box is larger than normal. The smallest carat weights were put into a locker, sunk within the locker with the hinged lid that trapped the larger weights. The distinctive oval label was one that had been altered several times, having been used initially by Astill &

Partridge, then Astill & King, then Astill & Payne, then by Payne when he was in Newcastle Street, then by Payne at 395 Strand near Southampton Street, then Payne at 395 Strand.

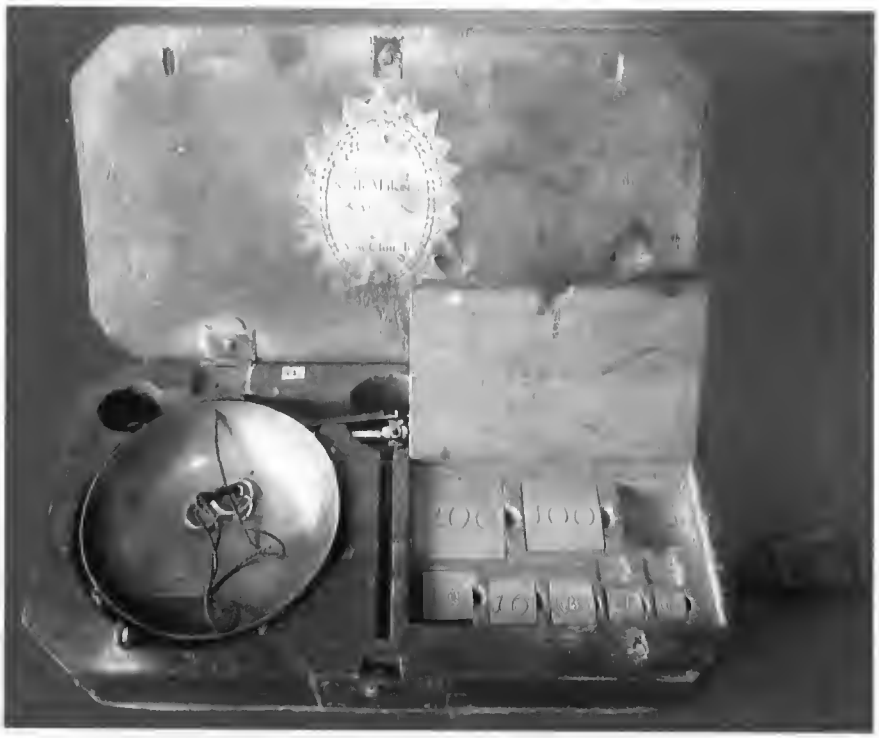


Figure 3. ⮝⮝

Another diamond scale by Benjamin Payne came up on ebay a while ago, which was of the normal size, having weights up to 16 carats only. The seller went into ecstasies about the quality - but then, so do I when I study my Payne scales!

By 1807, Benjamin earned enough to have his residence 5 Duke's Court, separate from his shop, 23 Newcastle Street. His apprentices possibly lived at 23 Newcastle Street, but I wonder who fed them, washed their clothes, and supervised them. One of them, Edward Walker, eventually became a master scale maker himself, so the upheaval did not spoil their training.

By 1808, Benjamin earned even more, enough to buy his shop on the Strand, number 395 near Southampton Street, where he worked until he retired in 1834. We can deduce that his income was rising because the Strand was one of the most prestigious streets in London, part of the main road between the City and Westminster, and a four-storey building with workshops would have been expensive. Many of his neighbours were scientific instrument makers, and the quality of Benjamin's scales bore comparison with their work.

Figure 4a. ⮜⮜

Figure 4b. ⮝⮝

1800	James Ovenden									
1801	James Ovenden									
1802	James Ovenden	Jonathan Rand								
1803	James Ovenden	Jonathan Rand								
1804	James Ovenden	Jonathan Rand								
1805	James Ovenden	Jonathan Rand	Thomas Shelton							
1806	James Ovenden	Jonathan Rand	Thomas Shelton							
1807	James Ovenden	Jonathan Rand	Thomas Shelton	Edward Walker						
1808	James Ovenden	Jonathan Rand	Thomas Shelton	Edward Walker	Charles Wm Saunders					
1809		Jonathan Rand	Thomas Shelton	Edward Walker	Charles Wm Saunders					
1810			Thomas Shelton	Edward Walker	Charles Wm Saunders					
1811			Thomas Shelton	Edward Walker	Charles Wm Saunders					
1812			Thomas Shelton	Edward Walker	Charles Wm Saunders					
1813				Edward Walker	Charles Wm Saunders					
1814	Samuel Phillips T/O to him		Henry Oakes	Edward Walker	Charles Wm Saunders					
1815	Samuel Phillips		Henry Oakes	Edward Saunders	Charles Wm Saunders					
1816	Samuel Phillips		Henry Oakes	Edward Saunders						
1817	Samuel Phillips		Henry Oakes	Edward Saunders	James Templar Shenston					
1818			Henry Oakes	Edward Saunders	James Templar Shenston	John Yates				
1819			Henry Oakes	Edward Saunders	James Templar Shenston	John Yates				
1820			Henry Oakes	Ed Saunders T/O to T Burchfield	James Templar Shenston	John Yates				
1821			Henry Oakes		James Templar Shenston	John Yates				
1822					James Templar Shenston	John Yates				
1823					James Templar Shenston	John Yates				
1824					James Templar Shenston	John Yates				
1825						John Yates				
1826										
1827										
1828	Robert Risebrook									
1829	Robert Risebrook									
1830	Robert Risebrook									
1831	Robert Risebrook	William Attwood								
1832	Robert Risebrook	William Attwood								
1833	Robert Risebrook	William Attwood								
1834	Robert Risebrook	William Attwood								
1835	Robert Risebrook	William Attwood								
1836		William Attwood								
1837		William Attwood								
1838		William Attwood								

Date of Payne's retirement. Who completed their training?

Figure 5. Chart of Benjamin Payne's apprentices, showing how many were in the workshop in any one year.

Payne freed James Ovenden, and promptly took another apprentice, Charles William Saunders in 1808, possibly related to John Saunders, Susannah Astill's apprentice. The records of Blacksmiths just record this as a standard transaction, but Charles must have formed a warm relationship with Benjamin Payne, as will be shown below, when discussing Payne's Will.

James Ovenden finished his apprenticeship in 1808, and set himself up at 8 Newcastle Street, just along the street from where he trained. A cheap oak-boxed scale survives, with a label stating *Late apprentice to Mr B Payne*. Some time between 1808 and 1811, he was taken into partnership with Benjamin, as "Payne & Ovenden", until 1814. Two apothecary/bullion scales survive from this period, both of exceptionally high quality. The one shown in Figure 4 is much bigger than an ordinary apothecary scale (having a beam 190 mm long), being in a heavy mahogany box with padded blocks to hold the parts without rattling. The Troy nesting weights were for weighing bullion, and the round knobbed weights were for apothecary use. Such weights are rarely found for apothecaries.

The fragility of business practice was brought home to James Ovenden, when George King, a grocer who owed them money, went bankrupt in 1814, leaving Payne & Ovenden to sue King through the Court. It was common practice for customers to run up debts, leaving the payments sometimes for many years, and thus exposing the sellers to bankruptcy in turn. Fortunately for Payne & Ovenden, the debts did not result in their losing their business.

Payne & Ovenden must have been delighted when their chondrometer was described and illustrated in 1812, in *A Journal of Natural Philosophy, Chemistry and the Arts* by J Nicholson. The book was aimed at the very people who would buy their scales!

The training given to James Ovenden, followed by his partnership with Benjamin, provided James with all the skills necessary to go independently set up business in Bristol. James was a London man, but Bristol was a thriving port, so it must have seemed a good place to run a business at 56 Broadmead, while residing at Knowle Hill, Bristol. He married Charlotte Augusta Matilda Astill, daughter of William and Susannah Astill. His son Richard Ovenden (born 1820 in London) was working as a scale maker at 35 Marlborough Street, Devonport, by 1844, and John Ovenden was a scale maker at number 3 Marlborough Street, so a chain of knowledge nearly two hundred years long went directly from Elizabeth Hux (1696), Thomas Hux (1696-1708), Daniel Thompson (1708-1753), John Goodman (1741-1776), William Astill (1776-1788), Susannah Astill & Benjamin Payne, James Ovenden and on to his son Richard, who was still working in Devonport in 1883. No scales are recorded by the three Ovendens in the West Country.

With Ovenden leaving him, Payne was running a big business alone for the first time. He immediately got a partly-trained apprentice from another scale maker, William Fage, who was in partnership with Dring as "Dring & Fage". Taking a partly-trained apprentice was quite common for a newly freed man, just starting a business, but we have no other record of a fully trained scale-maker getting a helping hand 22 years after he was freed! Payne was still training Edward Walker and Charles Saunders, both very near the end of their apprenticeships, so why did he need Samuel Phillips? The same year Payne took on a totally inexperienced new apprentice, Henry Oakes.

Technically, a master should not have more than two apprentices, but the Guild system was not fully in control by 1808. Boys still wanted to be officially apprenticed, and Blacksmith's records of bindings survive, but the Company seems to have turned a blind eye to the number in any one workshop. The alternative interpretation of this large number of apprentices was that Payne had fully qualified journeymen in his workshop who could do the training of apprentices.

The coin scale from Spalding Gentleman's Museum (Figure 6) has the appearance of cheap 18th century coin scales, with a swan-neck beam, mahogany box, plate hinges, and weights in pennyweights and grains. The person cutting the edge of the label had fun, turning the pointed triangles into rounded petals, a fiddly task. On other labels she cut the triangles off completely!

The apothecary scale shown in Figure 7 has most peculiar labels. The labels are so crude and simple, surely they must have been a temporary measure, to be used until he could get a better one

Figure 6. ⅄⅄

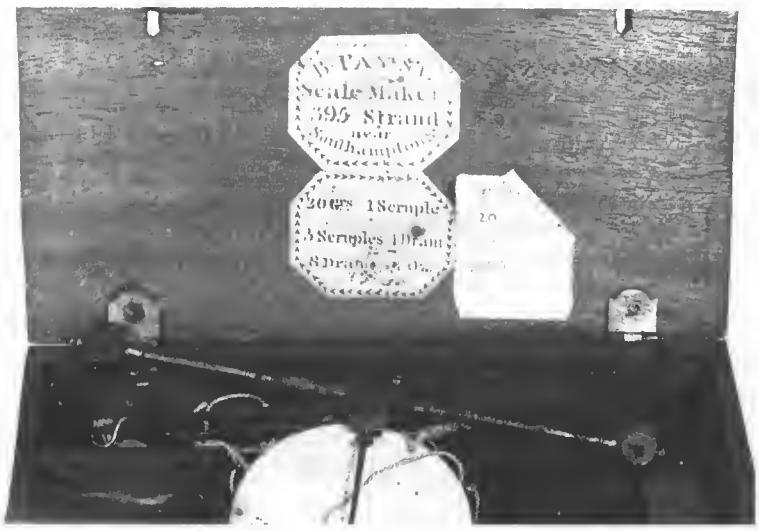
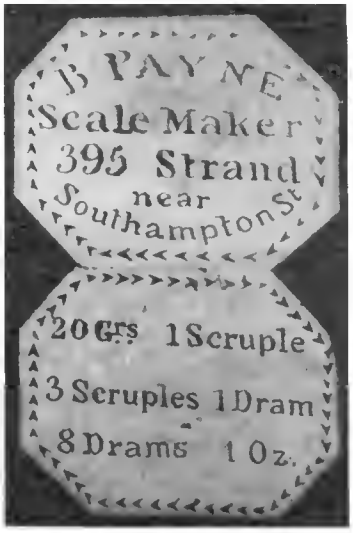


Figure 7. <>



made. The scale is another conventional one like the previous one but with box-ends, except that Payne used ivory for the pans. It was near the beginning of the 19th century that scientists began to appreciate that chemicals could affect each other. Brass was not a good metal to use with some medicinal ingredients, but ivory was inert, and Payne used it for his high-quality apothecary scales.

Searching for other examples of Payne's work, I asked Norman Biggs whether he had any. He has a high-quality apothecary scale (Figure 8) with one early oval label, and one crude label. The pans are silver (possibly plate) so again, Payne was using the best materials, in a carefully fitted box lined with green velvet.

Another box (Figure 9) with the crude label is a puzzle. The photograph was taken over 30 years ago, and leaves clues that need investigating. The box is only 135 mm (5½ inches) wide, so had a very short beam

Figure 8. >>

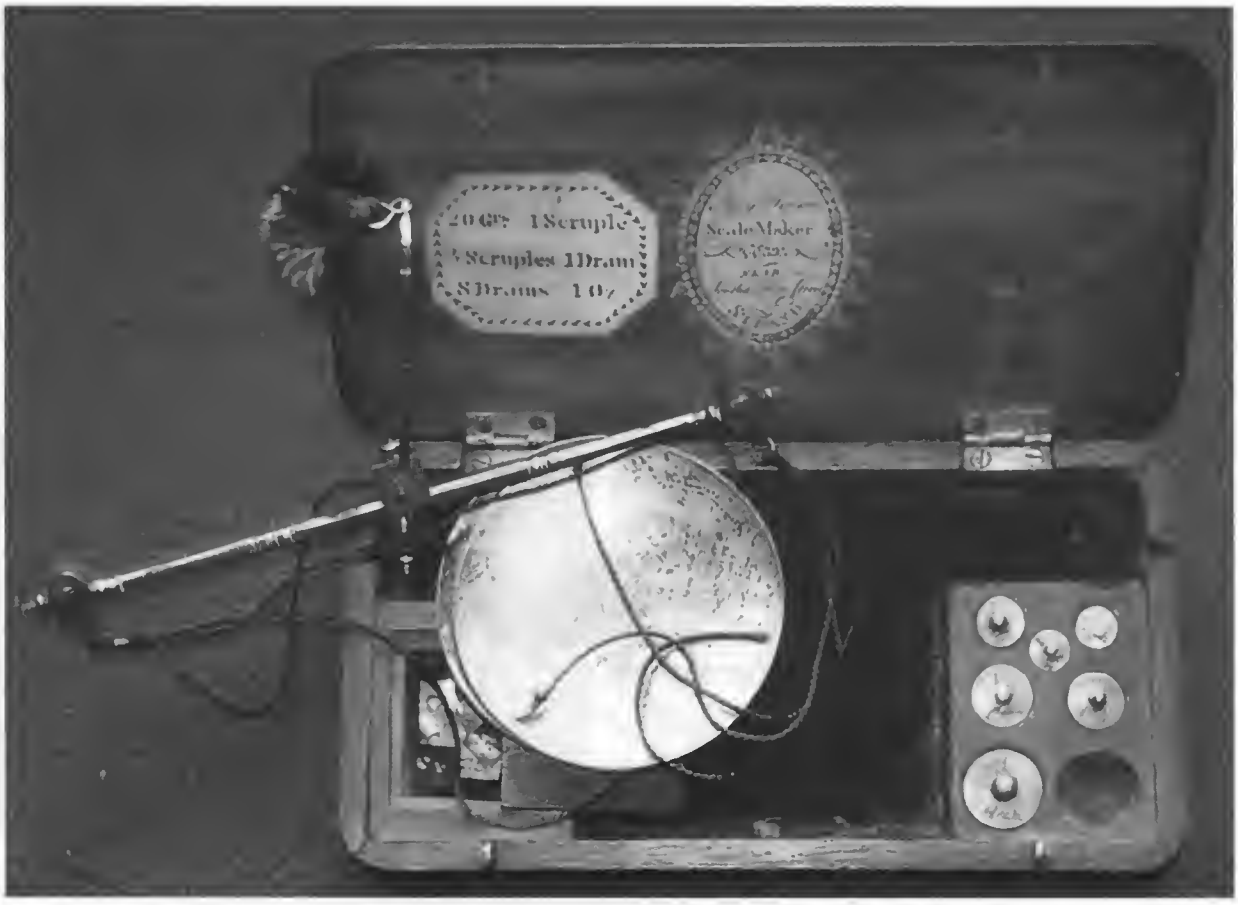


Figure 9. ➢➢

originally (at most, 120 mm). If the big hanging poise at the front was part of the original set, what was it for? The box has a fitting for a round pan in the centre, but the purpose of the set is a mystery.

In 1824, Payne made a full set of County Standard Measures[1], Figure 10a, with wooden strikes of several sizes. If Payne made these measures, rather than buying them in, he must have had a large and powerful lathe in his workshop. They were ordered by the Clerk of the Peace for the County of Westmorland on the 15th July 1825, and verified and given their indenture on the 14th Dec. 1825. The engraving was always superb on County Standards, but other makers did not put their name in a shaped plaque (Figure 10b). Did Payne ask James' father or uncle to do the engraving? The set went from a bushel (8 gallons or 64 pints) down to 1 gill (¼ pint) and each was engraved with a crowned flower. This mark is not recorded in other sources (Figure 10c).

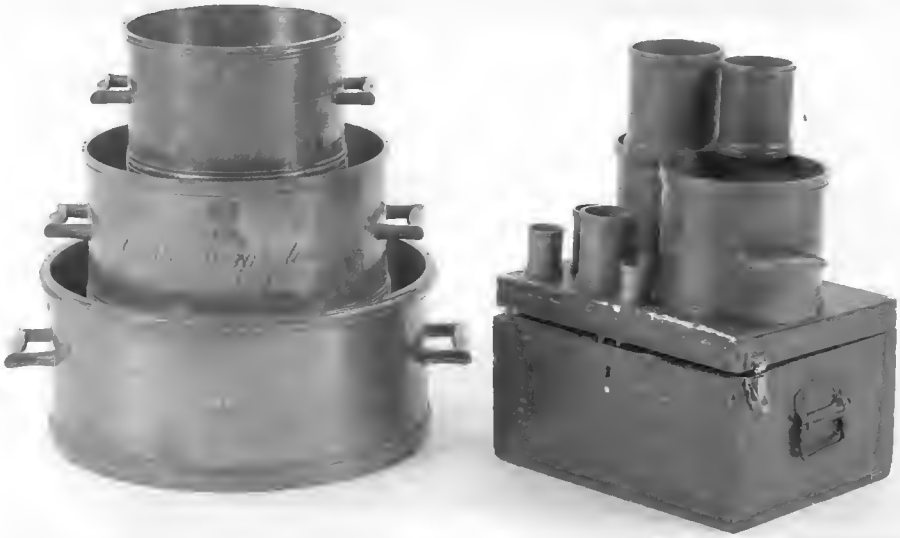


Figure 10a. ⅄⅄ These excellent photographs were taken by William Mees of Bonhams, Chester for their auction in 2012.

Figure 10b. ➢➢

The chondrometer (Figure 11) bears no mention of the Act of Parliament of 1826, so it is very likely that it was made prior to 1826. It is extremely similar to other English chondrometers of this period, having the small bucket of only ¼ pint. The instructions are comprehensive, explaining unusually clearly how to use the instrument.

Figure 10c. ➢➢

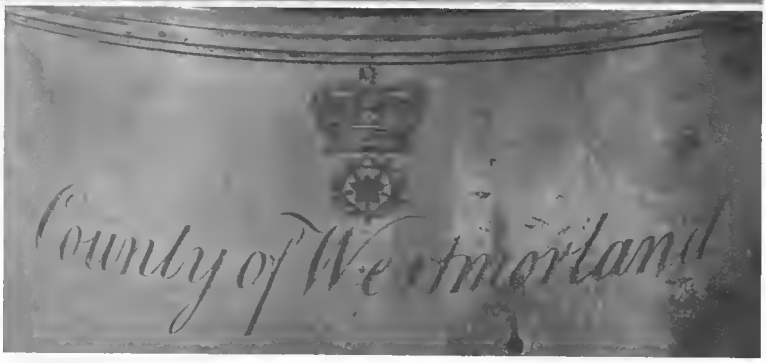


Figure 11. ➢➢

Payne made a tiny roberval scale (Figure 12a) dated 1826, only a few years after Medhurst had invented the roberval system. The style was slightly different from later versions of robervals. The pans were raised, the weight pan on a long collar, and the load pan on two ornamented pillars each side of the leg forming the linkage. Figure 12b. The reason for the height is not apparent. The iron casing was decorated with gold spirals. It was sold in a tightly fitting mahogany box, with bronze weights of 8 oz down to 1 oz, stamped for trade use.

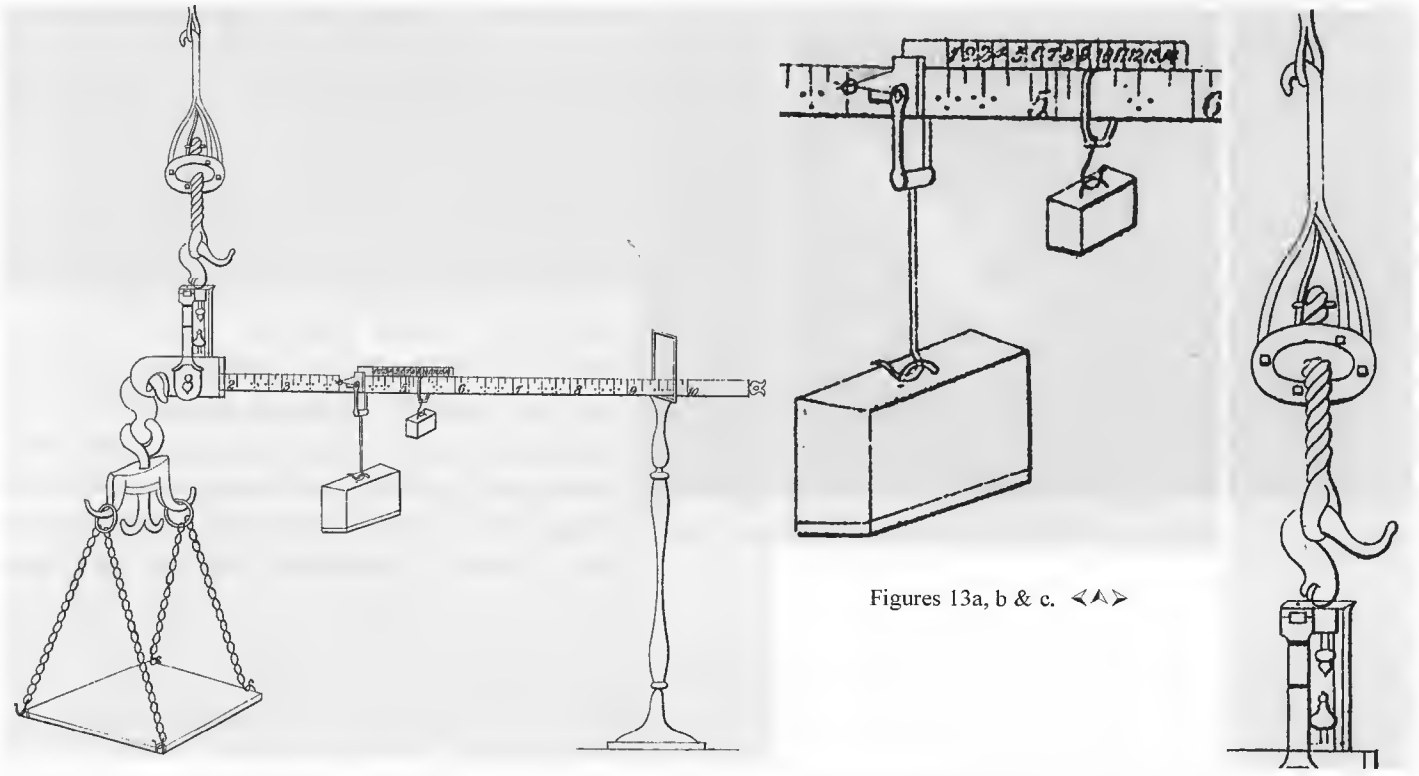
Figure 12 a & b. ≺⅄

The box contains a leather-covered lead rectangle marked "Balance for the larger plate marked..." The owner thought that the lead raised the capacity of the scale when weighing pewter or some other dense, heavy object.[2]

Payne took out a Patent in 1828, number 5886. (Figure 13a) It was for a steelyard with a poise (Figure 13b) that carried a subsidiary poise upon it. The accompanying drawing shows a trade scale with a separate guard on a pillar, [called by Payne a 'pillar porter']. to prevent too great oscillations by the beam. The text makes clear that when applied to large beams with tons of capacity, the graduations with the larger slide showed hundredweights, and the little poise indicated pounds. When used on a small beam of 14 lb capacity, the larger slide indicated suitably smaller amounts down to drams or grains. Additionally, the hanger from which the

steelyard hung had a screw-thread, so that the whole steelyard with an exceptionally heavy load, such as a hogshead or tub, could be raised from the floor by one man turning the screw. Figure 13c.

The principle was not new; Jesse Ramsden had put a slide upon a sliding poise on his folding gold balance before 1773, but there is no reason to suppose that Payne was reusing the idea. We should probably assume that Payne thought he was the inventor of a new and useful type of poise. He advertised his invention in 1831, with an illustration (Figure 14) of three variations, with hooks for casks, a platform for bales etc, and a table-top size with a small round pan, calling them his *Patent Weighing Index Beams that require no weights and only one scale [pan].*



Figures 13a, b & c. ⋖⋀⋗

Figure 14. ⋎⋎ This sketch was done in a hurry by the late John Millburn, who had access to a copy of Robson's Directory of 1831.

The text beneath the illustration read as follows *The above Sliding Index'd Lever Beams show the Weights by Two Indexes, one sliding on the top of the other; the heavy Weight of Hundreds, Half and Quarter Hundreds, by the large Index; the small of Pounds and Ounces by the top or Rider Index; it is an Instrument that has long been wanted, and often attempted, but never before made perfect by any invention, being more accurate than Scales and Weights, having only Half their Pressure, and will weigh a Hogshead (in a Door-way if required) of 20cwt, with one quarter the trouble and time. They are less liable to error, and if seen in action by Warehousemen and Grocers they would take them into their immediate use, being so simple as to require but one Man to weigh a Ton in one Minute without labour; they are likewise much less expensive, and more durable. B. Payne makes the above Patent at his Scale Manufactory, 395 Strand, where they may be seen in use, of all sizes for every description of weighing. Every other kind of Scales, Weighing Machines, Steelyards and Weights of the best workmanship and prices*

Figure 15. AA

that cannot but insure favours. Imperial Standard Brass Measures, Scales and Weights for Corporations lower than any House in London.

It is odd that Payne made hydrostatic balances, as many of the top scientific instrument makers made them in neighbouring shops. Figure 15 shows one by Payne that has lost its glass cylinder and both glass 'solids', the pear-shaped blobs that were used to determine the specific gravity of fluids. The balance could be used to check gold coins, but was mainly used for doing chemical experiments.

Payne made a good living selling his trade steelyards, but he made 'specials' as well. Figure 16a shows a turn-over steelyard in a mahogany box, fitted with padded blocks to hold the pieces securely. The poise is missing unfortunately, and one wonders whether it was as finely finished as the tips of the steelyard with their clover-leaf profile and grooved definition (Figure 16b). The ornate label (Figure 16c) is most unusual, being in tiny writing, with blue ink. Was it designed by the father of James Ovenden, who was an engraver? The steelyard is 320 mm (13 ins) long, with 12 lbs capacity, and graduated to weigh 4 lbs on the light side, but why was it made to be carried around? Other boxed steelyards of this period, including one by Thomas Williams[3] have survived but their function is unknown.

These examples of his work give a clear picture of a fastidious workman, selling to rich men. He retired in 1734, passing the shop on to James Templar Shenston, who had been his apprentice from 1817-1824. James Templar Shenston expanded into the manufacture of pot weights shortly after Juggins had invented them. Shenston stating that he was 'Successor to Mr B Payne', until his death in about 1846, whereupon his widow Mary Ann Shenston took over. However, she went bankrupt in 1846 and Benjamin Payne acted as her assignee during the bank-

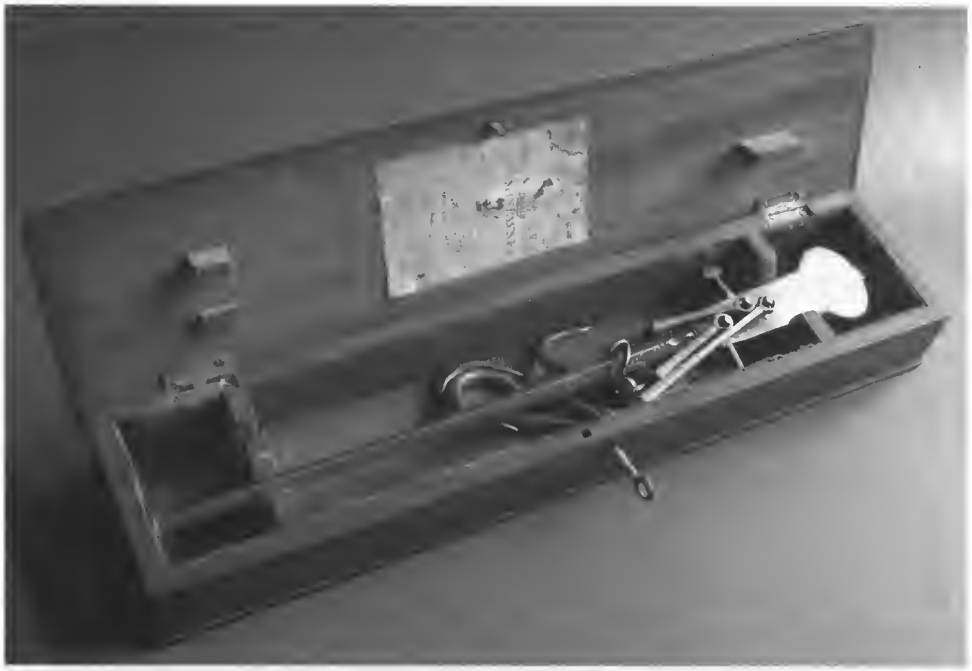


Figure 16a. AA

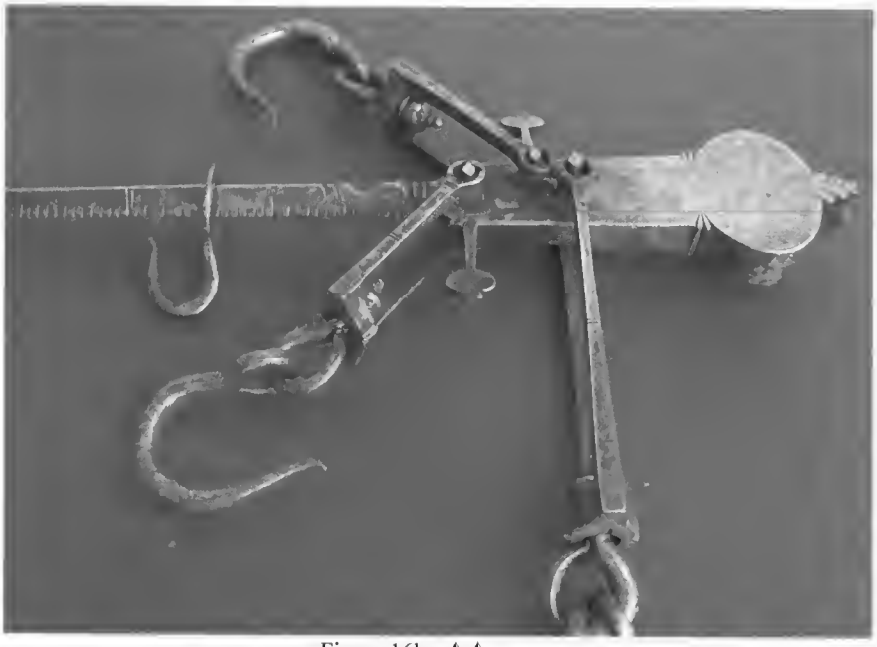


Figure 16b. ⅄⅄

Figure 16c. ⅄⅄

ruptcy proceedings, even though he was retired and living in Monken Hadley, out in the country to the north of London.

In 1837, the close friendship of Payne with the Ovenden family was emphasised by the inclusion of Payne as a minor beneficiary in the Will of Joseph Septimus Ovenden, one of the four engraver brothers (Richard, Thomas, Joseph and Robert). James Ovenden, the apprentice and partner of Payne, was probably the younger brother of Joseph S Ovenden.

The Will of Benjamin Payne provides clues of warm friendships that go back to his early days. Benjamin left money to James Ovenden's cousin, Charlotte Emily, whom he called his cousin. Benjamin left money to her son Joseph John and her daughter Isabel Angelina. He left money to James' daughter Mary Ann Payne Ovenden. Then he left money to Susannah Ann Hamp (née Ovenden) and Mary Ann Payne Ward (née Ovenden). His generosity spread to his ex-apprentice Charles Saunders and Charles' brother and sister, but he left money to only three of his own family, Benjamin Payne Coxon, John Matthew Payne and Mary Payne. It is difficult to estimate the total funds left after his prolonged retirement of 23 years, but he mentioned £1700, which converts to about £1,800,000 today. Not bad for the son of a waterman, no wonder he was classified as a 'gentleman' after he retired. He did not give a value to the residue that was to be shared by four people, including the relatives Charlotte Emily and John Joseph, who shared his house in Monken Hadley.

Maybe the warm relationship between the group surrounding Payne deteriorated after his death. In 1859 Charlotte Emily Hamerton and Isabel Angelina Hamerton sued Joseph John Hamerton and William Joseph Ovenden for their share of the money left to them by Benjamin Payne. What went wrong? Had Payne left too small a sum to cover all the sums mentioned in his Will? Was the Probate taking longer than usual?

So back to the question I started with. What was Benjamin like? He kept his friendships with people for fifty years or so. He kept an eye on his ex-apprentices. He had several relatives living with him. He made scales of top-quality. I think he was a thoroughly nice person who deserves to be remembered.

Acknowledgements:

With thanks to Pat Kiellor, descendant of the Ovendens, to the late John Millburn, the late Gwen Renton, Reiner Rix, and Norman Biggs.

Notes & References:

1. The measures were photographed by William Mees, photographer for Bonhams, Chester, who kindly gave permission for their use. They were sold in the auction of 18 Oct 2012.

2. The roberval belonged to Gwen Renton, but since her death, it has been hidden away by the Trustees, and is not available for experiments.

3 The steelyard by Thomas Williams was in the collection of Brian Brass for many years, and was recently transferred to the collection of Jenny Hutchinson.

How I Came to Join ISASC

BY DAVID APPS

I have always been a collector, my first love is stamps and has been since the age of five.

I started work as an apprentice draughtsman, had another 4 years in another drawing office, then changed career completely by starting work in a scrapyard. There are various types of scrap, Ferrous, Non-Ferrous, Exotics, Precious Metals etc. My first job was in Exotics, Jet Engine alloys, Magnet Scrap, Titanium etc. This company was closed by its parent company The Royal Dutch & Shell Oil Co.

I then started with a very forward-thinking large family firm. I started in the ferrous section, then moved to run the Non-Ferrous department in three yards. The company ran several shredders; these are giant machines that shred anything these days from a lorry downwards; the ferrous is taken out with a magnet and sold to the steelworks. What is left is a mixture of glass, rubber, wood, stone, non-ferrous and many other things. This material was sold to other companies for processing, but our directors invested in a floatation plant to treat this material. I soon found myself working in that department.

The product was sieved, sucked, blown, shaken, washed, sized, etc. until almost all of the non-metallics were removed. The material was then floated in the first bath in a mixture of water and magnetite which removed the rest of the non-metallics, (which floated) from the metal (which sank). Then into a bath with a mixture

of Ferro-Silicon and water which separated the Aluminium (which floated) from the Heavy Metal (which sank).

The heavies consisted of anything that did not float, i.e. Brass, Copper, Lead, Stainless Steel, Zinc, etc. The sizes were 0-10 mm (fines); these were predominantly stone collected on the underside of cars, plus any stone or concrete that the unscrupulous would hide in their scrap to increase the weight they were paid for! Next size was 10-30 mm, then 30-90 mm, then +90 mm, which we called oversize and was hand-sorted. We had a small floatation plant for the fines, but the main plant did the rest.

Most of the products were sold to the Far East, the British could not afford the price of the Aluminium, nor the cost of sorting the heavy metals. We were, when I retired at Christmas 2009 loading about 20 containers per day of Aluminium and probably the same amount of heavies.

Once the product was through the plant, the Aluminium was

dried and was ready for dispatch. Except the 10-30 heavies, these were hand picked to remove the coins; you would not believe the amount.

As one of the managers who had been through most of the departments, I was the person that always seemed to be asked to show people around and on one occaision the tour was almost finished and we were standing in the 10-30 mm heavies bay when I noticed two Bell weights. My guest was hastily dispatched and a return made where several more weights were soon found..

The following afternoon I went across to the picking line to ask the ladies to pick out any weights that they saw. The ladies arc far better pickers than the men, they have more nimble fingers. I went back the morning after; they had had a full day picking weights and to my astonishment they had found 65. Some were bent, many were very modern metric, but this was the start.

I decided to take a bit more interest and bought some of Norman Biggs' books. I got more interested and went with a friend to antique and collector's fairs, purchased a few more and got hooked. I tried to find out about the society, this was probably before I got Norman's books, but I found this difficult, I even rang the local Weights & Measures office to see if they knew but they laughed at me. It was not until my friend and I visited the Avery Museum that the very helpful and knowledgeable Howard Green found me the address of Phil Holroyd.

The rest as they say is history, it was not long before Norman cottoned on to the idea that I was soon to retire and would have loads of spare time, that he persuaded me to become publications secretary. A post that I thoroughly enjoy, however, what I know pales into insignificance when I listen to some of the talks.

Going back to my days at work. I have said that the coins were hand picked from the 10-30 mm heavies sometimes as many as about 400/500 Kgs per day; they were later washed in a concrete mixer with water, as they were all very grey from the Ferro-silicon; they were then moved to the picking area where, once again ladies sorted them into denominations, country etc. As you might imagine there were coins from every corner on Earth.

I should say that there were two main origins for the coins, firstly the shredder, a giant hammermill where anything could come out very bent, secondly from incinerators that burnt household waste. Here the coins would not be bent but burnt and covered in ash.

We sorted the British into £sd & £p, sent the silver bearing to the refiners and the

rest to the mint, although towards the end of my employment the copper coins (97% Cu) were worth more as scrap so they went in the scrap. The pickers, as well as picking coins and weights, also picked jewellery.

Part of my job was to go through the jewellery and coins we could not allocate, namely the rubbish, coins/ discs/washers/tokens that the sorters did not recognise, or were not coins at all. In here I would find the odd sovereign, half sov. Guinea, half guinea, Krugerand etc. etc. Also contained in this were coin weights. I have included a few photos of these. There are also pictures of a Guinea & £2 coin, probably the only one that ever came our way! Another shows two 7 lb weights, on the left a modern one that was bought into our yard as brass scrap while the much older one on the right, was one of many given to me by the proprietor of another scrapyard that I did a lot of business with; it has several Cambridge marks. A further picture shows at top two 5 sovereign weights, at bottom, a badly damaged 10 sov. from the fragmentiser and a square 4 pistol weight from who knows where.

The picture of the five bell weights were from the hand picked +90mm.

The last picture shows another Thirty Six Shilling, a DXII (12 pence), a Guinea, a 17 dwts+9 Grs (Spanish Doubloon), lastly a 4S 4D weight; do not know what this was for.

In the early days, all of the coins were counted into bags, then the bags into sacks. British currency went back to the mint via the delivery van that bought our cash. Later we purchased a very sophisticated machine for weighing the coins into the bags, this really speeded things up.

Coins that we collected a lot of were sent back to their country of origin. European countries were easy to deal with; they would pay 80/90% of face value, except the French, they would only pay about 10%. The first couple of times we sent coins back to USA proved very difficult indeed because they had no import tariff allocated to import their own coins. However, my colleague, who spoke many languages (which was why those that went back to Europe were not a problem), was very persistant and after many telephone calls he sorted America out.

The Euro. We started to find these in the coin room within a week of them being introduced and quantities picked up as more came into circulation. We thought that the Euro would be a huge help to us as they were interchangeable country to country but when we tried to send some back we soon found that one country would not accept anothers' coins. When I retired, we were part way into sorting about 30 tonnes of them into countries!!

Starting as a scrap buyer is a good way to become a collector, as I believe some American members of ISASC can confirm.

A Dual Rate Stamp-Box Postal Scale

BY STEPHEN BARNETT

Brass stamp box postal scales were made in four different shapes. Each design has a registration number (Figure 1 and Figure 2). All of the examples that I have seen are graduated in ounces and have one set of postage rates appropriate for the time that their design was registered (1888).

Figure 1.

Several examples appeared in the recent auction of Brian Brass' collection. Diana Crawforth-Hitchins, in the catalog, wrote about them: *Joseph Allen; a brass letter scale and stamp case combined, in the form of an envelope, the reverse modeled as the back of an envelope, opening to a single postage stamp compartment, the front showing weights and rates, with letter clip, registration No.102604 (the design for this balance was registered in 1888), capacity 6 oz, 4.1 cm.*


Figure 2.

Recently, I was fortunate to find an example on which there are two postage rates (Figure 3): one for "town" (1d per 1/2 ounce) and one for "country" (2d per 1/2 ounce). It also has the registration number 102604, issued in 1888. The "town" rates match those for England from 1865 to 1871. The "country" rates do not match any of the rates given in ISASC's *Handbook of Old Weighing Instruments*.

Figure 3.

Figure 4 shows the back of the scale with its model of the back of an envelope. Figure 5 shows the details of the inside of the scale, its spring and the compartment in which postal stamps could be stored. In these respects it is identical to all of the other Joseph Allen designs.


Figure 4.

So we have two mysteries: why the dual rates and why are the "town" rates for years earlier than the design registration number. One can speculate on the reasons for the dual rates. Perhaps it was intended for use somewhere in the British Empire in which rural conditions added to the cost of transporting the letter. Perhaps it was for use in posting letters in more rural, less accessible, areas of Great Britain, again where conditions outside the town added to the cost or risk of transporting the letter. Or perhaps it was for use in an area (the Channel Islands?) which had the authority to impose rates on postage in excess of the legal amount.

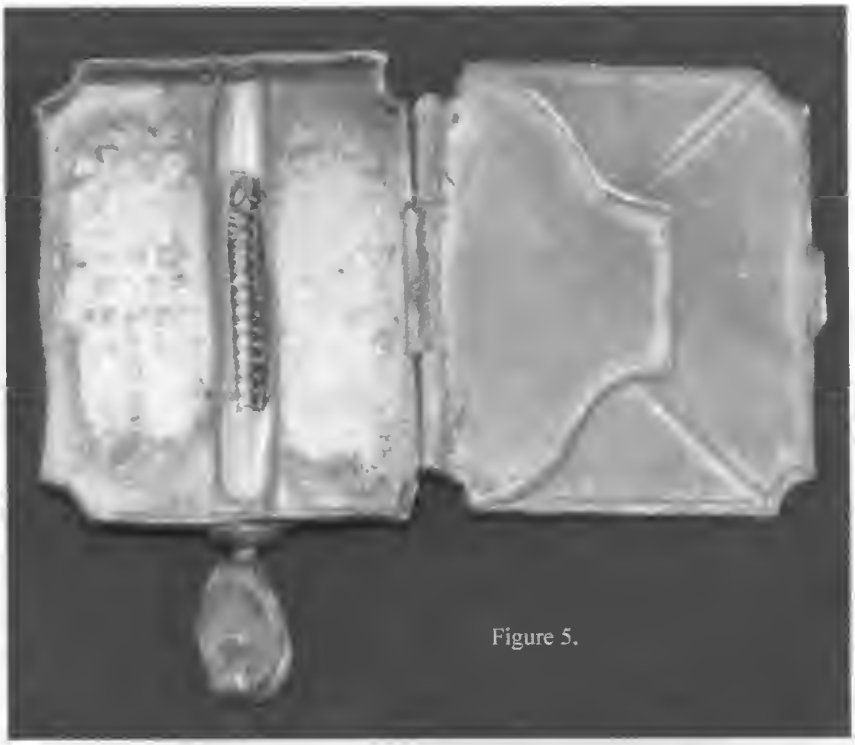


Figure 5.

I was talking to my wife, Kathy, about this and she asked could it have been used in Canada? This led me to do a web search on postal history for Canada and other countries in the British Commonwealth. I discovered that Wikipedia does have entries about postal history of various countries, mainly from the perspective of the history of the stamps that were used. The information for Canada and Australia regarding postal rates set by the government (federal and provincial) in the 19th century did not match the rates on the scale. The Wikipedia entry for New Zealand had a link to *An Encyclopedia of New Zealand 1966*. The section on Mail Services contained the following information:

Inland Surface Mail

Early postage rates varied considerably. The settlers at Hokianga, when requesting a regular overland mail from the Bay of Islands, suggested a fee of not more than 1s. a letter, which was agreed to. Letters sent by ship from the Bay of Islands to Wellington cost 8d A Post Office ordinance of 1842 set the postage for inland letters at 6d. a half ounce but allowed newspapers to be sent free. The British Government overruled this ordinance and reduced the letter rate to 4d, charging 1d on newspapers. A Proclamation in 1849 reduced the inland letter rate to 2d a half ounce irrespective of distance. In the 1860s three different rates applied: one for delivery from the office of posting, another for delivery in the same province, and another for delivery in another province. The rates were 1d, 2d, and 3d a half ounce respectively. "Universal" penny postage was introduced on 1 January 1901, by J. G. Ward, Postmaster-General. It was an event of great importance. The reduced rate applied inland and also to all British and many foreign countries.

This provides the answer to the questions about the dual rate stamp box scale. It is likely that it was made for use in New Zealand between 1888 (when the scale was first introduced) and 1901 (when the New Zealand postal rates changed) for determining the cost of postage for delivery from the "office of posting" (town), or delivery "within the same province" (country). We can surmise that the third rate was not on it because there was not enough room, or because delivery to another province was not as frequently used and there would have been other means to determine the postage required.

This seems like a plausible explanation of the reason for the dual rates on this stamp-box postal scale. If anyone has any additional information, please contact me by email at skbarn@verizon.net.

Vive la France

BY JEROME KATZ

I did not have to travel to France to find this scale (Figures 1 & 2). How about Boston!

Figure 1. Front View.

A person weighing platform scale of wood furniture construction and obvious quality. Approximately 4 ft high with a 19" wide beam support. The platform, 19" deep by 13.5" wide, is covered in what appears to be linoleum, but possibly leather. All in a dark oak finish.

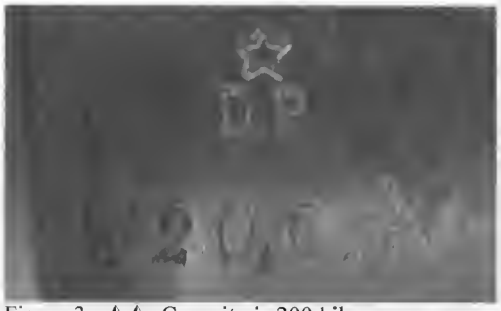


Figure 3. Capacity is 200 kilograms.

Figure 2. Back View.

The platform balance beam mechanism with its sliding poises is rather similar in design and function to that used by W & T Avery in their person scales, but is denominated in kilograms (Figure 3) rather than stones and pounds. A neat unusual feature is a tamper proof small metal box with lock and remaining key at the end of the beam (Figure 4). Inside the box is a balance wheel to set the beam to its initial null condition. How often have you seen this null balance wheel under lock and key??. A hanger, with 2 round slotted flat hang-on weights, is also there (Figure 5). Possibly there were once additional add-on weights.

Figure 4. Box on beam end showing lock and key.

Figure 5. Hang-on weights and hook for key underneath beam.

Figure 6. ⋎⋎ The beam includes a lock box at top right which holds the zeroing balancing mechanism.

Figure 7. ⋎⋎ Beam showing box containing mechanism for zeroing the scale open at right.

Made by Leon Roche, listed in the French professional directories of 1876 and 1891, as scale maker, fabricator of small parts for wagons and trains, and civil engineer, at 4 Rue de la Feronnerie, Paris. A maker's celluloid name tag is still affixed to the wooden beam support and declares that ROCHE makes weighing equipment. All in French.

It WORKS !!

Figure 8. ⋏⋏ Celluloid label attached to scale.

Old Adverts

Here are two old brochures advertising scales made by Continental Scale Works, Chicago.

The brochure on the left advertising their baby scale as *Stork Scale* is *Copyright 1925.* Inside it features a height and weight chart for boys and girls.

The brochure on the right advertising their Health-o-Meter *Automatic Bathroom Scale* is *Copyright 1926.* Each measures 3 3/8" by 5 7/8".

The brochures were distributed by East End Plumbing & Heating Co., Inc in Moline, Illinois who was most likely a retailer for Continental.

Learning More About the Grand Rapids Lumber Tester Scale

BY STEPHEN BARNETT

Measuring the moisture content of wood is critical to construction, carpentry, joinery, and veneering. If the wood used in these trades is too dry, it can be brittle and subject to splitting or breaking while being cut, planed, or shaped. If it is too moist, subsequent shrinkage after the wood dries further can cause bowing, splitting, gaps in the joints, or in the case of veneer, ungluing from the carcass wood. Fresh lumber contains a high percentage of moisture and is typically dried using air drying or kiln drying using warm moist air to achieve the proper level of moisture content. For furniture, this is 6-10% according to USDA Forest Service Research Note FPL-0226 1973.

The lumber, furniture and veneering industries needed ways to measure the moisture content before, during and after the drying process to know when the proper moisture content had been achieved. In the early 20th century, a number of devices were designed to measure moisture content based on the weight of a sample of the wood before and after drying. These scales were more complicated to use than the standard beam, steelyard and roberval scales that were in wide use for a variety of purposes. To learn about and understand how these devices were used, we can use information on or with the scale, which provided instructions to the user on how to prepare the sample, how to weigh it, and how to compute the moisture content after drying. As is the case today with many products, the scale manufacturer provided sales information, instructions, patent information or design registration information to market their product and inform the buyer on the proper use of the product. Unfortunately, much of this information has not survived and we have to rely on whatever information is on the scale itself to aid in discovering more about it and its proper use. So it is indeed fortunate to find a scale which contains previously unknown information with it.

Last year I found and purchased a Grand Rapids Moisture Testing Scale in a wooden carrying case which provides a lot of previously unknown information about this product. The main purpose of this article is to record and share this new information with other members. The intent is to interest members who might have other styles of lumber moisture testing scales with additional information about them, to contribute to EQM so that we build a knowledge base in this area.

Figure 1.

Figure 1 is an example of a moisture testing scale with a lot of useful information about it on the scale itself. The Grand Rapids Lumber Tester was made for the Grand Rapids Vapor Kiln by the Buffalo Scale Company. The Chart (Figure 2) was copy written in 1916 by the Grand Rapids Veneer Works. It contains instructions for using the scale.

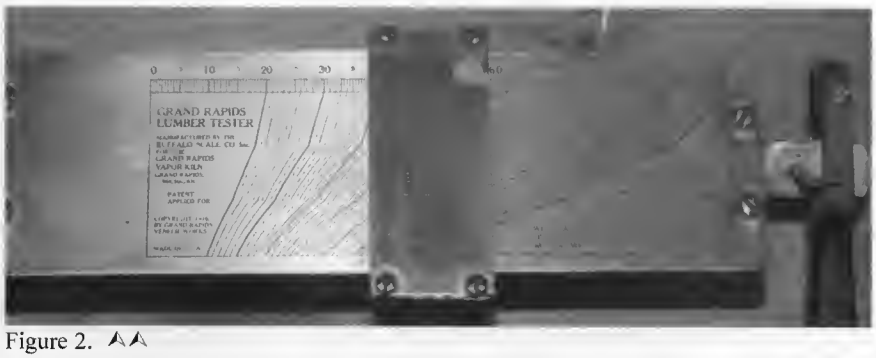


Figure 2.

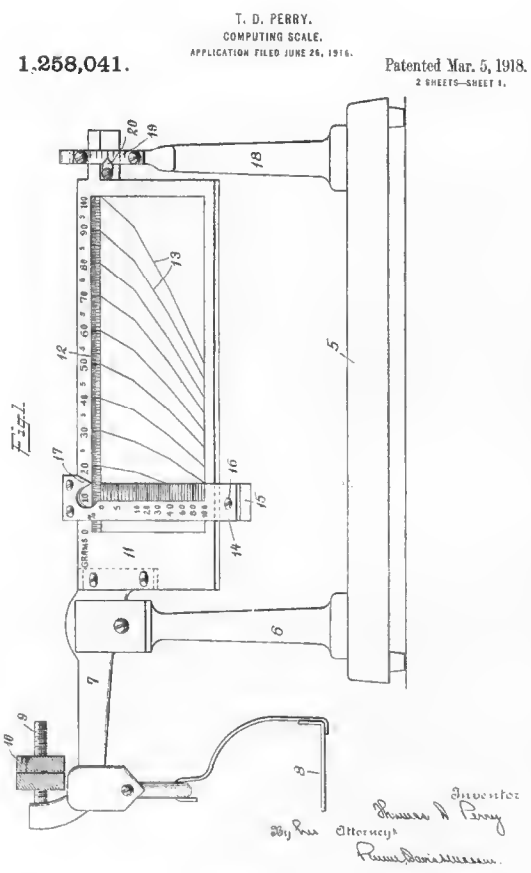

T. D. PERRY.
COMPUTING SCALE.
APPLICATION FILED JUNE 26, 1916.
1,258,041. Patented Mar. 5, 1918.
2 SHEETS—SHEET 1.

Figure 3.

The sliding cursor enables the user to compute the lumber moisture content for air dried and kiln dried lumber. On the iron base is stamped "GRAND RAPIDS VAPOR KILN GRAND RAPIDS MICHIGAN".

The chart says "PATENT APPLIED FOR". Indeed, a Patent, number 1,258,041, was issued on March 5, 1918 to Thomas D. Perry of Grand Rapids, Michigan assignor to the Grand Rapids Veneer Works of Grand Rapids, Michigan (Figure 3).

In March 2012, my wife and I were at an annual tool show and auction. We attend because there are often unusual tools for sale (one of our other collections), and occasionally there is an unusual scale or set of weights for sale. As we were approaching the end of one of the rows, I spotted an unusual shaped wooden box with a carrying handle in the next row (Figure 4). Something about it caught my attention. We walked around the end of the aisle. The door of the box was open and to our surprise, it contained a Grand Rapids Lumber Tester with instructions thumb tacked to the inside of the door (Figure 5). I thought; wasn't that clever. A previous owner, wanting to carry the scale around with them made a box for it. It would make a neat addition to our collection, even though we already had the scale shown in Figure 1, but without a box. An easy negotiation with the dealer led to bringing it home at a very reasonable price.

I exchanged emails with ISASC member Jim Dietrich to see if he thought that the box might be original to the scale or made by an owner of the scale at a later date. He did not know and encouraged me to bring it to the 2012 Convention and do a show and tell about it to see if other members might have an answer to the question of the box.

Figure 4.

Figure 5.

As I began to prepare the show and tell presentation, Kathy, my wife, asked me if I had REALLY looked at the label and instructions on the inside of the box. I had not. Lo and behold, when I looked carefully at the label, one of the pictures on the top of the label is of the scale in a carrying case just like this one! So the label answered my question: the box was a manufacturer's option that the purchaser could buy (Figure 6). The label not only contained the detailed instructions for using the scale, it also contained

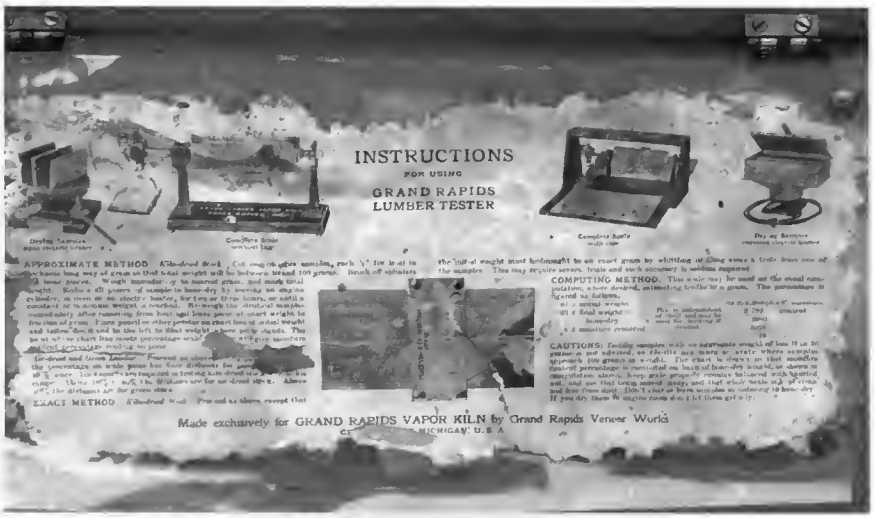


Figure 6.

Figure 7.

advertising pictures of other products made by the Grand Rapids Veneer Works, including the Lumber Tester without the case. Figures 7 and 8 show the details of the label.

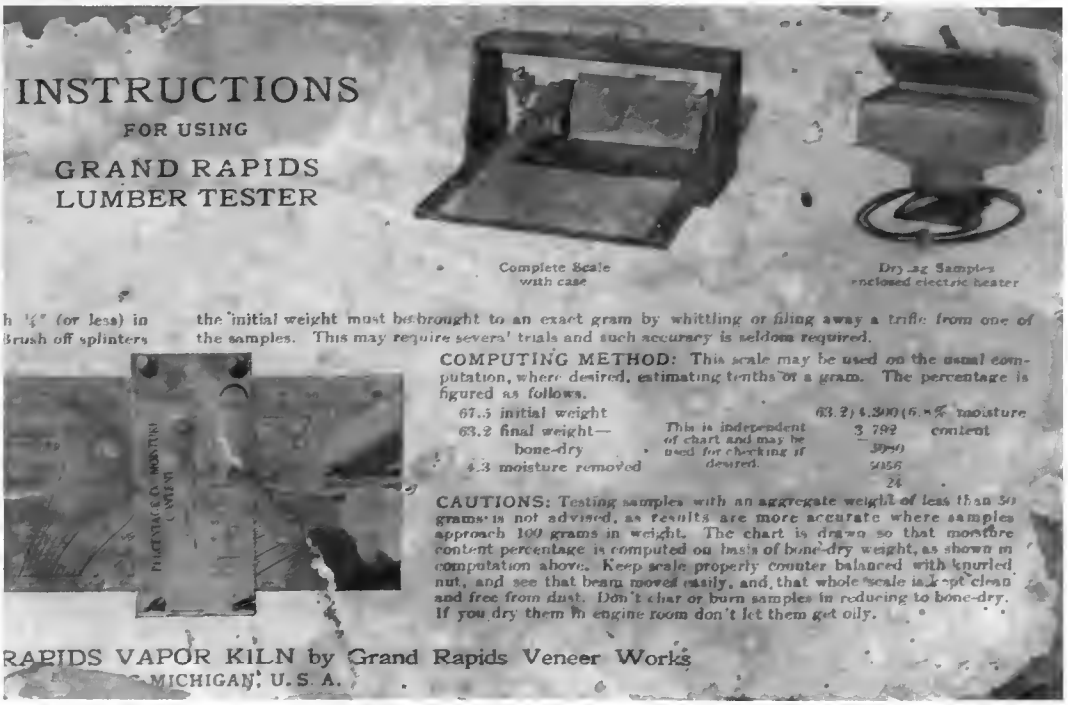


Figure 8.

The case is made of hardwood planks joined together. The doors open on each side with pin hinges and no knobs. There is no catch. The doors, when shut, are slanted and rest within the body of the case to keep them closed. The scale rests on a specially built platform on the base so that it doesn't shift in transit. The dimensions of the case are: 15¼" wide, 8¼" high (10¼" including the handle), 7" deep at the base tapering to 3" deep at the top of the case. Mine has a cylindrical wood handle like a tool box handle, with a spiral groove cut in it to help provide a firm grip. The one pictured on the label has an oval metal carrying handle.

GRAND RAPIDS LUMBER TESTER

The above scale is absolutely the last word in efficient testing of lumber for moisture content or dryness.

So simple anyone can use it.
Is direct reading.
All percentages based on dry weight.
Requires no figuring or computations.
No charts or rollers to bother with.
Can be used for lumber, veneers, rubber, paper, pulp, etc.
Accurately made, graduated to metric system (0-100 gram) and can be used for ordinary weighing.

PRICE LIST

Kiln Maintenance Supplies

Ebonoid. A water-proof, acid-proof coating for brick, cement, tile and frame kilns.
55-gallon bbls. $46.75
Allow 1 gallon to 100 sq. feet first coat.

Plastico. For kilns "too far gone" to be painted with Ebonoid.
700-lb. barrel 56.00
100-lb. lots 12.00
Allow 75 lbs. per 100 sq. ft. ⅛-inch thick.
Apply like plaster after surface is clean and dry.

Metal Kote. A mineral paint to be used on all iron work in kiln except radiation.
5-gallon and 10-gallon cans, per gallon 1.75

Kurtain Kote. An acid and water-proof coating for canvas curtains. Keeps curtain and ropes soft and pliable. Allow five gallons for two coats, both sides.
5-gallon and 10-gallon cans, per gallon 2.50

Koil Kote. A graphite base paint for use on coils.
5-gallon and 10-gallon cans, per gallon 2.50

Curtains. Canvas. Made of the best grade duck. Allow 2% each way for shrinkage. Includes cord, pulley blocks, and cleats, but no rollers or slats.
Double outside curtains, per sq. ft. (16 and 18 oz.) .....
Without cord, pulley and cleats .....
Single inside curtain, per sq. ft. (18 oz.) .....
Without cord, pulley and cleats .....
Pulley blocks and cleats best galvanized, cord heavy hard woven spot.

Klintite. An acid-proof, water-proof fabric lining for frame kilns, walls, ceilings and doors.
Per square, 100 sq. ft. 8.00

Copper Nails. For nailing Klintite. The only type of nail obtainable that will resist the action of the acids from lumber.
Per pound, 2 in. long ..... .50

Automatic Temperature and Humidity Controllers
Reducing Pressure Valves

DRY KILN DOOR CARRIER EQUIPMENT

PRICES ON APPLICATION

Pres... By

The GRAND RAPIDS VAPOR ...LN

GRAND RAPIDS, MICHIGAN

TESTING LUMBER

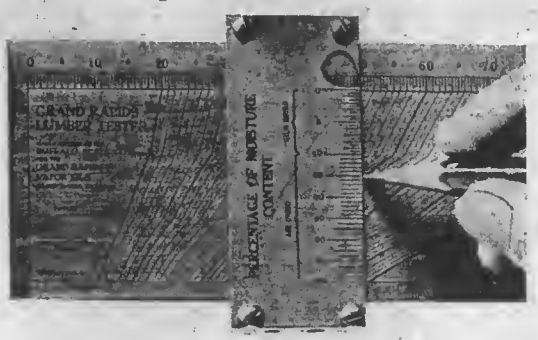
and other materials for
MOISTURE CONTENT

All lumber contains moisture, absolutely dry lumber being impossible, commercially speaking. In small test pieces, or on a laboratory basis, perfectly dry lumber can be obtained. Perfect dryness (often called "bone dry") is a condition in which all moisture has been evaporated. Lumber with a moisture content of 5 per cent means that in addition to the dry fibre weight the board contains 5 per cent of water (by weight), or a total of 105 per cent weight compared with 100 per cent dry fibre. In other words, one-twentieth of the dry fibre weight represents the additional weight of water.

There are three principal reasons for testing the moisture content of lumber, as follows:

1. When you buy lumber to be sure you are receiving what you bargain for.
2. When you put lumber in the kiln to ascertain the period of time necessary for drying.
3. To insure properly dried lumber before emptying the kiln.

Method of Using the Grand Rapids Testing Scale.



INSTRUCTIONS FOR USING GRAND RAPIDS MOISTURE CONTENT TESTING SCALE

Cut one or more test pieces of lumber, averaging about a quarter of an inch in thickness, cut crossways of the board, of a total weight between fifty and one hundred grams, or in brief, a cross-section of the board one quarter inch thick. Weigh at once and record the total weight.

Reduce the sample to bone dry condition by leaving in electric dryer until a constant minimum weight is reached. Re-weigh the test piece immediately after removed from oven and leave the poise on scale at exact weight to fraction of gram.

Place pencil or pointer on the chart line at initial weight and follow down to the left to final weight where poise stands. The point where chart line meets percentage scale on poise will give moisture percentage reading on poise. This is accurate to one-half per cent.

Price $32.50 f.o.b. Grand Rapids.

Figure 9. AA Advertisement page. Phil Wehman Collection.

Figure 10. ⅄⅄ Advertisement from *Aviation and Aeronautical Engineering*, June 15, 1917, page 465.

Figure 11. ⅄⅄ Advertisement from *The Wood-Worker*, March, 1919, page 7.

My show and tell presentation at the 2012 Pittsburgh ISASC Convention generated a lot of interest. No onc attending, including our colleagues from Michigan, had seen anything like this before. They encouraged me to write this article to share and preserve this new information about the Grand Rapids Lumber Tester.

Since then, our friend Phil Wehman, found an advertising brochure (Figure 9) that speaks on the merits of this interesting Lumber Tester and our Editor has located some advertisements for the tester in the June 15, 1917 issue of *Aviation and Aeronautical Engineering* and two 1919 issues of *The Wood-Worker Magazine* (Figures 10, 11 & 12) and .

This experience shows how an unexpected opportunity provides further information about a scale, its use and supplier, beyond that available on the scale itself. It encourages all of us to be on the lookout for similar opportunities to get more information about other lumber moisture content testing scales, and through EQM to share this information with other members.

Notes:

Utz Schmidt provided a copy of the patent to me.

http://www.fpl.fs.fed.us/documnts/fplrn/fplrn226.pdf

Endnotes:

i I found some historical information about the Grand Rapids Veneer Works on the web at http://www.kent.migenweb.net/baxter1891/42furniture.html

MANUFACTURE OF VENEERS

The Grand Rapids Veneer Works are the practical outgrowth of several attempts and experiments in the manufacture of thin woods. In August, 1882, the Grand Rapids Veneer and Panel Company was organized with a capital of $30,000, but being a new enterprise it was not successful. After about two years it was superseded by the A. B. Watson Veneer and Panel Company. In January, 1886, the Grand Rapids Veneer Works were incorporated, with a capital stock of $30,000, purchasing the entire plant of the A. B. Watson Veneer and Panel Company, with the following official board:

A. B. Watson, President; Cyrus E. Perkins, Vice President; C. B. Judd, Secretary and Treasurer; Z. Clark Thwing, General Manager. Formerly thin veneers were cut in flat sheets through the grain by circular saws, and the product was limited to the comparatively small quantity used in the furniture trade mostly. By the special machinery now used are produced veneers and panels of native woods, used in all sorts of wood work where it is necessary to combine strength with lightness. The log, after being thoroughly seasoned, is sawed to the right length and steamed soft. It is then centered to rotate in front of a heavy knife, which cuts a smooth and continuous sheet of veneer, ranging in thickness from four to one hundred and fifty sheets to the inch, and in width up to ten feet four inches. They have the only machine used exclusively for cutting heavy stock - the half-inch sheet which it produces being used for such work as cutter stock, tops of children's sleighs, and road-cart or carriage bottoms - and, being cut with the grain of the wood, this possesses strength that is unattainable in sawed work; hence there is a demand for it beyond their capacity to manufacture. In panel stock, of every three sheets, one is run through gluing rollers and placed between the other two crosswise of the grain; after being subjected to an immense pressure until thoroughly set, this is finished and sent out to the customer much stronger than if of one solid piece.

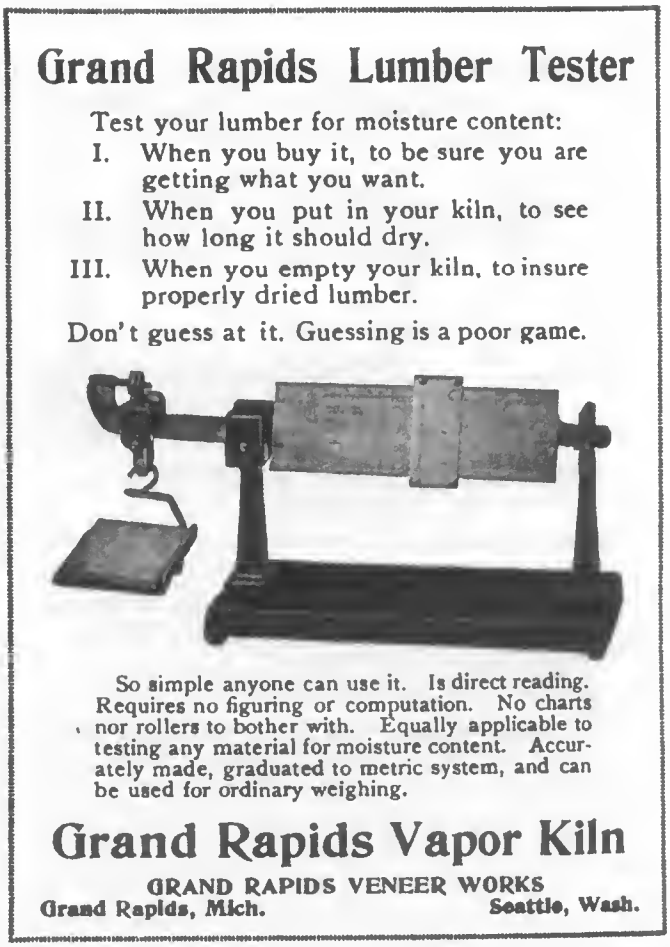


Figure 12. Advertisement from *The Wood-Worker*, November, 1919, page 6.

The product of this factory, amounting to $60,000 a year, is sent to all parts of the world. The work gives employment to some sixty men whose services cost the company upward of $2,000 monthly. The factory is by the river bank on North Front Street, between Eighth and Tenth.

ii Thomas D Perry was apparently a prolific writer about various aspects, techniques and equipment involved in the wood kiln industry. Some time ago, I found, I think via the Grand Rapids Public Library website, the following list of pamphlets published by the Grand Rapids Veneer Works, a number of which were authored by Mr. Perry:

12.5 x Grand Rapids Vapor Kilns. Leaflets / Grand Rapids Veneer Works. Nos. 29-37, 80, 82-84, 86-88, Formerly M674.G76

1986.098 Added 8/19/2008

- No. 29. Scientific Lumber Drying / Z. Clark Thwing.
- No. 30. Cooking Lumber Dry / Thomas D. Perry
- No. 31. Correct Methods of Drying Lumber / E.U. Kettle
- No. 32. Economical Arrangement of Dry Kilns / Thomas D. Perry
- No. 33. A Modern lumber Drying Plant / Thomas D. Perry
- No. 34. Dry Kilns for Government Service / Thomas D. Perry
- No. 35. Government Specifications for Kiln-Drying Airplane Woods / Thomas D. Perry.
- No. 36. Efficient Dry Kiln Layouts / Thomas D. Perry
- No. 37. Methods of Computing Costs of Kiln Drying Lumber / Thomas D. Perry.
- No. 80. Grand Rapids Vapor Kiln Instructions and Record Blanks. Kiln Dry Your Lumber Accurately.
- No. 82. Grand Rapids Vapor Kiln Operating Instructions. 1918.
- No. 83. Grand Rapids Vapor Kilns. Maps from the Western Front of the Woodworking Industry.
- No. 84. Grand Rapids Vapor Kiln Equipment. Kiln Trucks, Transfer Cars, Lumber Lifts, Loaders, Door Carriers.
- No. 86. Natco Hollow Tile for Dry Kiln Construction. 1918.
- No. 87. Kiln Operating Records for all kinds of Kilns. Tabular and Graphic. 1918.
- No. 88. Grand Rapids Vapor kilns. A New Kiln Kink, Pocket Kiln Operating Records Books.

More Lumber Testing

This article is reprinted from *SEASONING OF WOOD, A TREATISE ON THE NATURAL AND ARTIFICIAL PROCESSES EMPLOYED IN THE PREPARATION OF LUMBER FOR MANUFACTUR, WITH DETAILED EXPLANATIONS OF ITS USES, CHARACTERISTICS AND PROPERTIES,* by Joseph B. Wagner, 1917, pg 247-249.

The Troemroid Scalometer

In figure 100 is shown the Troemroid Scalometer. This instrument is a special scale of extreme accuracy, fitted with agate bearings with screw adjustment for balancing. The beam is graduated from 0 to 2 ounces, divided into 100 parts, each division representing 1-50th of an ounce; and by using the pointer attached to the beam weight, 1-100th part of an ounce can be weighed.

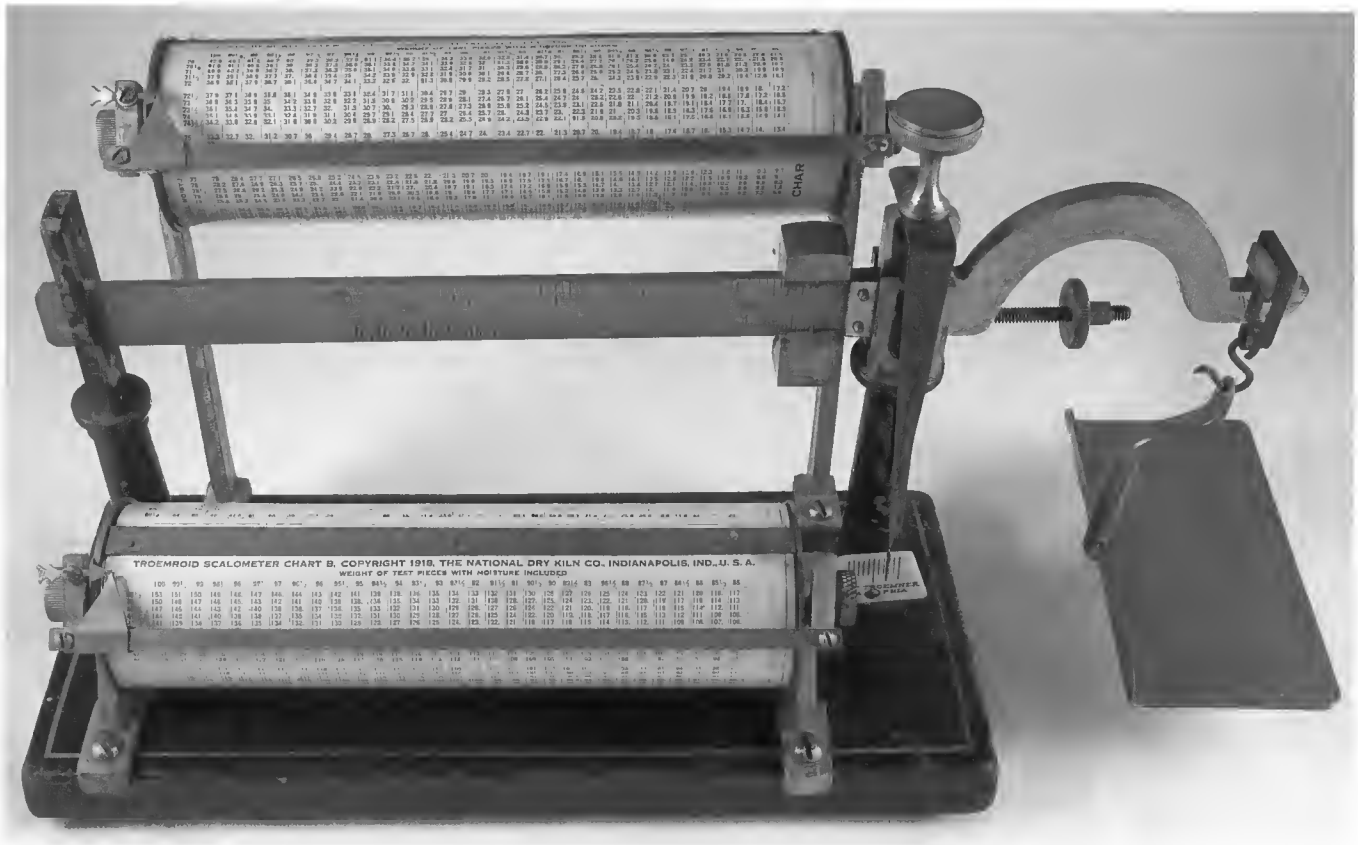


Fig. 100. The Troemroid Scalometer.
Leslie N. Firth Collection.

The percentage Table No. II has a range from one half of 1 per cent to 30 per cent and is designed for use where extremely fine results are needed, or where a very small amount of moisture is present. Table III ranges from 30 per cent up to 90 per cent. These instruments are in three models as described below.

Model A. (One cylinder) ranges from ½ of 1 per cent to 30 per cent and is to be used for testing the moisture contents of kiln-dried and air-dried lumber.

Model B. (Two cylinders) ranges from ½ of 1 per cent up to 90 per cent and is to be used for testing the moisture contents of kiln-dried, air-dried, and green lumber.

Model C. (One cylinder) ranges from 30 per cent to 90 per cent and is applicable to green lumber only.

Test Samples. - The green boards and all other boards intended for testing should be selected from boards of

fair average quality. If air-dried, select one about half way up the height of the pile of lumber. If kiln-dried, two thirds the height of the kiln car. Do not remove the kiln car from the kiln until after the test. Three of four test pieces should be cut from near the middle of the cross-wise section of the board, and 1/8 to 3/16 inch thick. Remove the superfluous sawdust and splinters. When the test pieces are placed on the scale pan, be sure their weight is less than 2 ounces and more than 1¾ ounces. If necessary, use two or more broken pieces. It is better if the test pieces can be cut off on a fine band saw.

Weighing. - Set the base of the scale on a level surface and accurately balance the scale beam. Set the test pieces on the scale pan and note their weight on the lower edge of the beam. Set the indicator point on the horizontal bar at a number corresponding to this weight, which may be found on the cylinder at the top of the table.

Dry test the pieces on the Electric Heater 30 to 40 minutes, or on the engine cylinder 2 or 3 hours. Weigh them at once and note the weight. Then turn the cylinder up and at the left of it under the small pointer find a number corresponding to this weight. The percentage of moisture lost is found directly under pointer on the horizontal bar first mentioned. The lower portion of the cylinder Table No. II is an extension of the upper portion, and is manipulated in the same manner except that the bottom line of figures is used for the first weight, and the right side of cylinder for second weight. Turn the cylinder down instead of up when using it.

Examples (Test Pieces)

Model A. Table No. II, Kiln-dried or Air-dried Lumber:
If first weight is 90½ and the second weight is 87, the cylinder table will show the board from which the test pieces were taken at a moisture content of 3.8 per cent.

Model B. Tables No. II and III, Air-dried (also Green and Kiln-dried) Lumber:
If the first weight on lower cylinder is 97 and the second weight is 76, the table will show 21.6 per cent of moisture.

Model C. Table III, Green Lumber:
If the first weight is 94 and the second weight is 51, the table shows 45.8 per cent of moisture.

Keep Records of the Moisture Content

Saw Mills. - Should test and mark each pile of lumber when first piled in the yard, and later when sold it should be again tested and the two records given to the purchaser.

Factories. - Should test and mark the lumber when first received, and if piled in the yard to be kiln-dried later it should be tested before going into the dry kiln, and again before being removed, and these records placed on file for future reference.

Kiln-dried lumber piled in storage rooms (without any heat) will absorb 7 to 9 per cent of moisture, and even when so stored should be tested for moisture before being manufactured into the finished product.

Never work lumber through the factory that has more than 5 or 6 per cent of moisture or less than 3 per cent.

Dry storage room should be provided with heating coils and properly ventilated.

Oak or any other species of wood that shows 25 or 30 per cent of moisture when going into the dry kiln, will take longer to dry than it would if it contained 15 to 20 per cent, therefore the importance of testing before putting into the kiln as well as when taking it out.

Editor's Note:

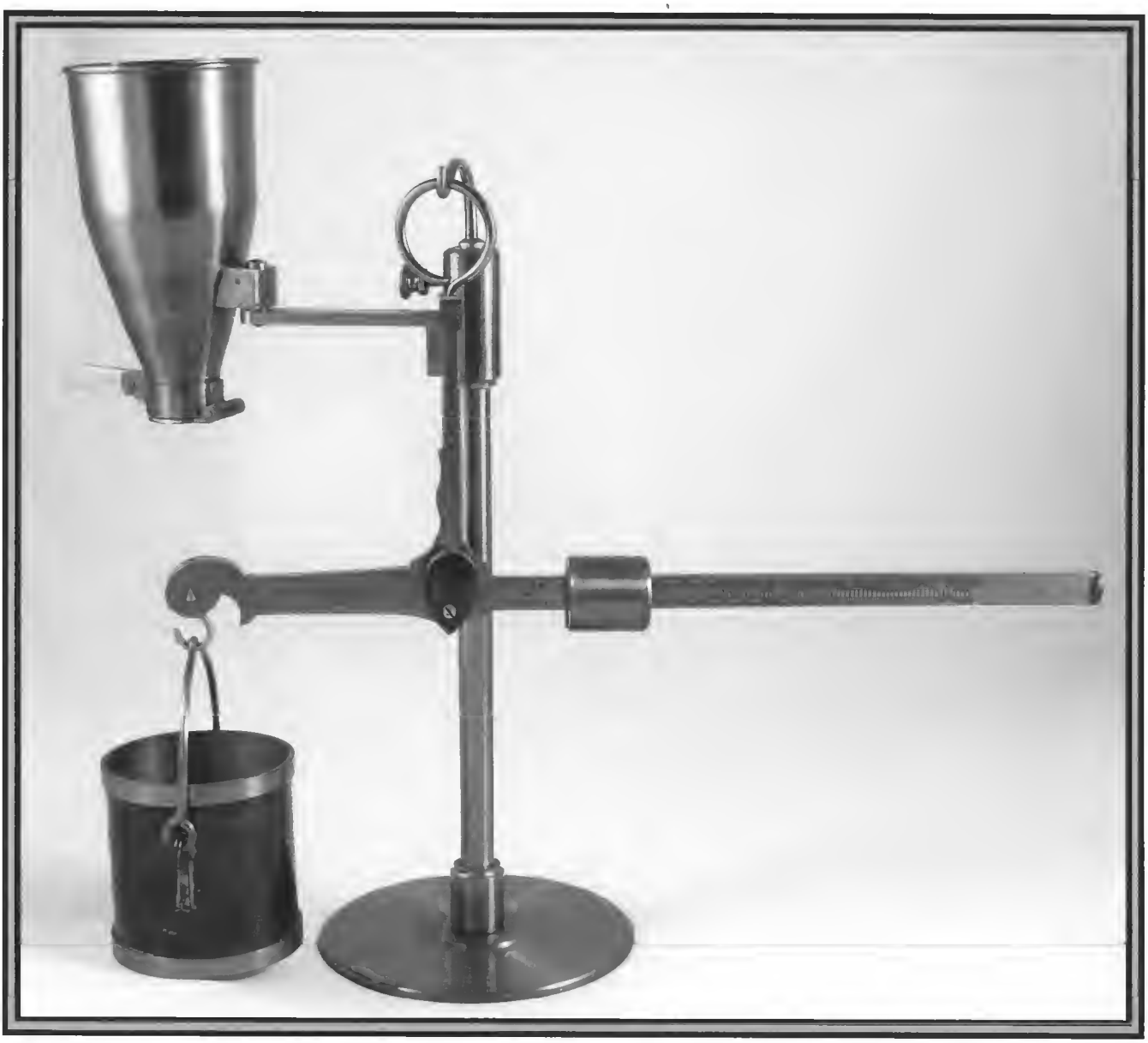
The original illustration has been replaced with an original scale.

ISASC

EQUILIBRIUM®

QUARTERLY MAGAZINE OF THE INTERNATIONAL SOCIETY OF ANTIQUE SCALE COLLECTORS

2013 ISSUE NO. 4 PAGES 3965 - 3992



Cover Picture

Engraved on the beam of this fine grain scale is L. Schopper, Leipzig. The scale is graduated from 0-90 Kilograms per Hectolitre on the front of the beam and from 0-150 Holl. Pfd. per Zak on the back of the beam. It is complete with the original green enameled bucket, brass stand and funnel. It measures 10" tall with a beam length of 10 1/8" and a bucket measuring 2 1/8" tall by 2" in diameter. The set is a beautiful example of Schopper's best work.

Mary Anne Murphy Collection.

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ISASC
INTERNATIONAL SOCIETY OF ANTIQUE SCALE COLLECTORS

EQUILIBRIUM is published quarterly in February, May, August and November.

ISSN: 0893-2883

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Article submissions are preferred in MS Word with Times New Roman Font size 12.
Photos are best in 300 DPI Jpegs in a separate file with a maximum of 3 photos per Email.

Mike, Bernie and Frank; Grain Weights (and Measures)

BY JOHN KNIGHTS

Back in the 1950s and 60s there was a rather 'cheesy' comedy duo called Mike and Bernie Winters who, nonetheless, enjoyed some degree of show business success in the UK. There is a story that they once played the Glasgow Empire; a somewhat notorious venue where it was said 'no turn was unstoned!' as nearly every act that appeared was mercilessly heckled by the audience.

Their act commenced with Mike, the 'straight man', coming on and doing a bit of preliminary business. After a few minutes of less than rapturous reception, Bernie the 'funny man' gurned his way on to the stage, doubtless expecting some applause. Instead there was a deathly hush until someone broke the silence by calling out 'Oh God there's two of them!'

I was reminded of this when I was having a browse on ebay one day and came across a rather unusual and, to me at least, a significant offering.

Some of you may recall a couple of articles that I wrote in Issues 2 /2006 and 1/2009 concerning a 'mystery' object that I tentatively identified as some kind of corn measuring device, probably used as part of a chondrometry system within a grain processing plant (fig 1). At the time, I had never come across any similar mechanism, but this changed during my ebay meanderings. There at last was a Bernie to my Mike!

Fig. 1. <<

Fig. 2.

This mechanism is of US manufacture; being marked 'Shannon Philada' (fig 2) (probably J. B. Shannon of Philadelphia who was a supplier of various kinds of tools in the late 19th and early 20th centuries) so was presumably designed for use within North American plants.

Fig. 3.

The mechanism, made of steel and brass, looks as though it is designed to be set into a pipe of rectangular cross section, which would form a sampling point on a grain transport system. The device consists of two sliding rectangular blades connected by a pivoted lever (fig 3). As one blade is lifted by an external handle to release the grain, the other one drops and prevents any further grain entering the system, thus allowing a measured quantity of grain to be dispensed. When the handle is released, a leaf spring forces the outlet blade to the closed position and lifts the inlet, allowing the system to refill. The mechanism is less sophisticated than the British 'Young & Co' device as it appears to lack the 'valve overlap' necessary to ensure the measured length is accurately dispensed. It would appear to be possible to have both blades partially open at the same time which would lead to inaccuracy.

The device is presumably designed to fit snugly into an industry standard pipe to ensure accurate control of the grain sample (fig 4). The dimensions are given as 18" x 10.5" x 5.5" but these are clearly external measurements so I gave some thought to the actual volume that it would control once installed.

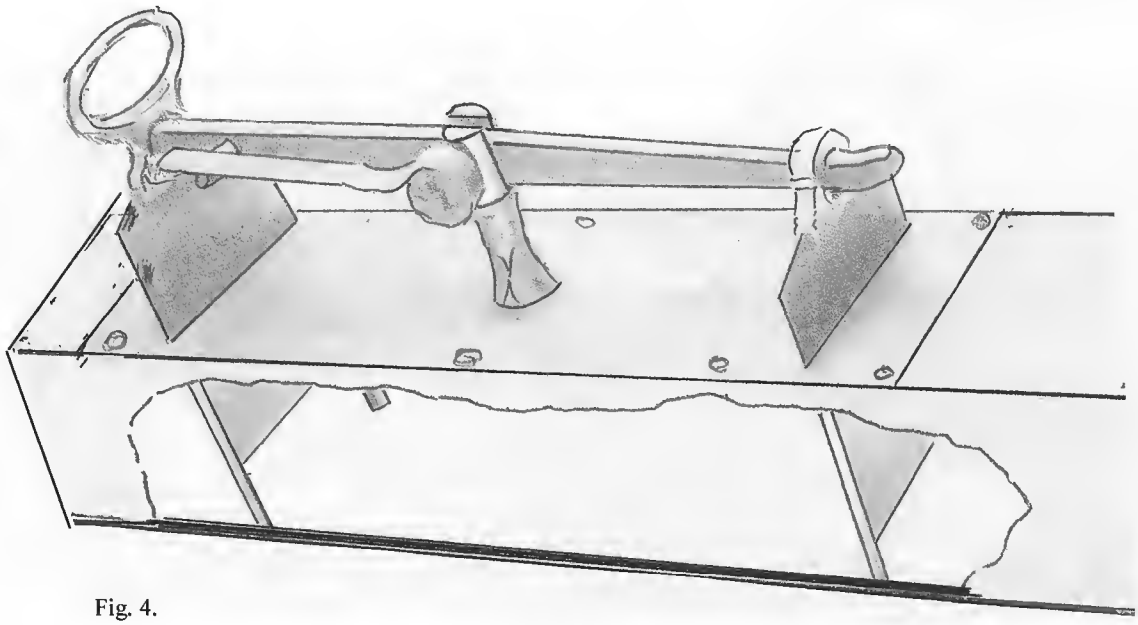


Fig. 4.

The actual working measurements within the pipe appear to be more like 13.5" x 4.5" x 4.5". In the case of the Young and Co. device the measured quantity was found to be 0.1 of an Imperial Bushel. Given the US antipathy towards anything decimal, the American device would be more likely to dispense an appropriate octal proportion of the US dry bushel, so the estimated measurements would seem to suggest that the device was designed to deliver ⅛ of a US bushel.

In the UK, they say of buses that you wait for hours for one to come along and then two arrive at the same time. It appears this is also the case with grain measuring instruments!

I was further perusing grain related items when I encountered an interesting advertisement from the turn of the 20th century relating to a mechanism called the Dentler Automatic Register and Bagger and this led me to a whole new area of grain weighing and measuring. Made by the Dentler Company of Vicksburg, Michigan, this is a device which was attached to a threshing machine where it measured the amount of grain being produced (fig. 5). It further appears that Frank Dentler the inventor of this mechanism is not without some little fame; at least within the town of Parkville Michigan, which features in its web page the following information,

Frank Dentler of Parkville invented the Dentler Bagger, one of the first automated pieces of farm equipment, for weighing (sic) and measuring the output of a threshing machine.

Further investigation indicated that, in the early years of the 20th century, there were a number of devices available which were designed to be fitted to the outlet spout of a threshing machine to ascertain the output and/or allow standard size sacks to be filled. Some devices were described as 'weighers' and appeared to be automatic weighing machines which dropped repeatable batches of threshed grain into the sacks attached to the outlet spout (Fig. 6) whilst others like the Dentler operated on a volumetric basis and registered bushels as they passed through the system.

Fig. 5. AA

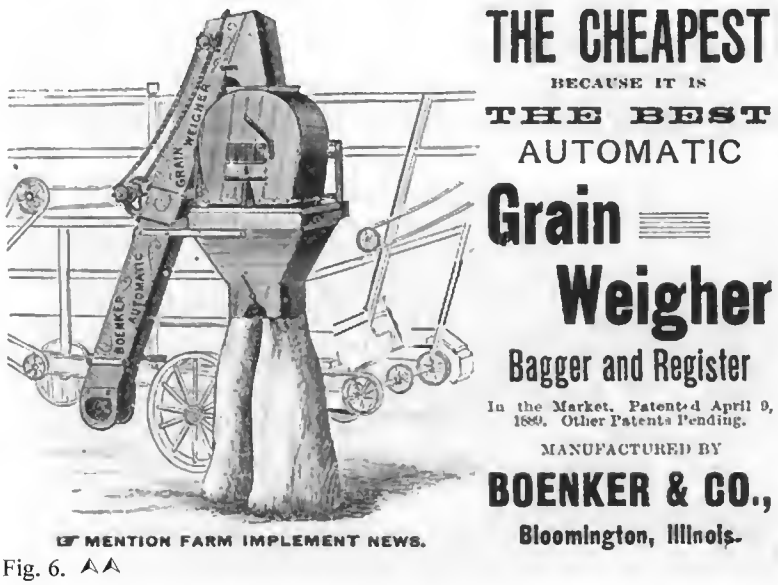


Fig. 6. AA

It was not clear from the advertisements how these volumetric devices worked and my first assumption was that they operated on a similar principle to the Young and Co. or Shannon mechanism. This would, however, require a large degree of human intervention thus negating the claim to be automatic.

Some illumination was finally obtained when I lit upon a catalogue for yet another harvester mechanism made by the Hart Grain Weigher Co. of Peoria, Illinois, which I actually purchased to find out more. This was a Grain Register device designed to be attached to a combine harvester to measure the output of threshed grain in US bushels (Fig.7). The cata-

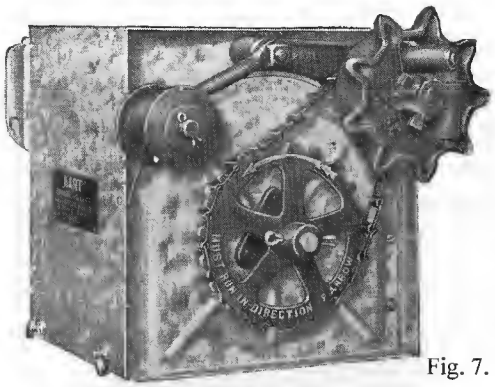


Fig. 7.

logue dated from the 1920s, but the instrument described appeared to have similarities to the earlier threshing machine mechanisms.

This device is indeed fully automatic, being attached to and operated by a drive from the harvester. The internal view (Fig. 8) shows a segmented rotor X that transports the grain from the inlet to the outlet and the rotation of this element also clocks up the totalisor (fig.8). The configuration is superficially like a rotary liquid meter but there is a fundamental difference. The rotor of a liquid meter is turned by the fluid pressure of the pumped liquid, ensuring it only operates in the presence of the metered medium. In the case of the grain register, the rotor is driven by an external source and there clearly has to be a system that only permits registration when material is passing through the rotor. This is ingeniously achieved by the rotating auger Y shown in Fig. 8. This device is connected to a clutch mechanism that is engaged by the pressure of grain resulting from the turning of the screw. If the level of grain falls below the auger, the pressure is removed, the clutch disengages and the rotor stops turning.

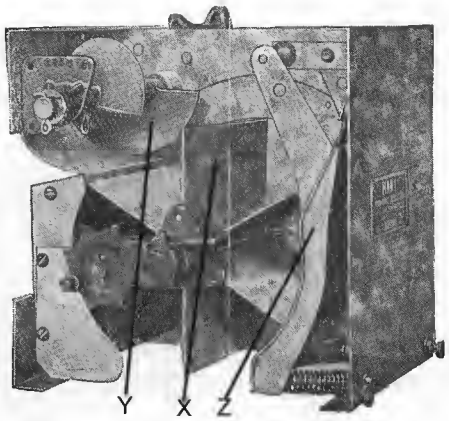


Fig. 8.

The rotor has 6 compartments, each of which transports 1/48 of a bushel so each full turn of the rotor transports 1/8 of a bushel. Fine adjustment is achieved by the spring loaded 'stroking mechanism' Z. This plate is adjusted by external screws which are sealed after calibration.

These devices were marketed as an aid to the farmer, enabling him to 'know how much grain is harvested per hour or per day', keep 'a check on truckers' and 'a check on elevator weights', presumably a reference to the weight ascribed to the crop by the buyer. The register appears to indicate to the nearest bushel only (Fig. 9), so would not be considered a precision instrument and clearly less accurate than the trade weighbridge or batch weigher used by the merchant.

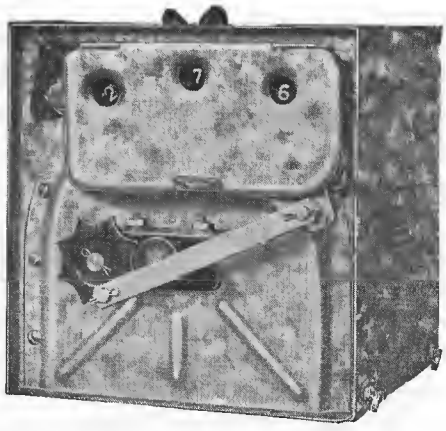
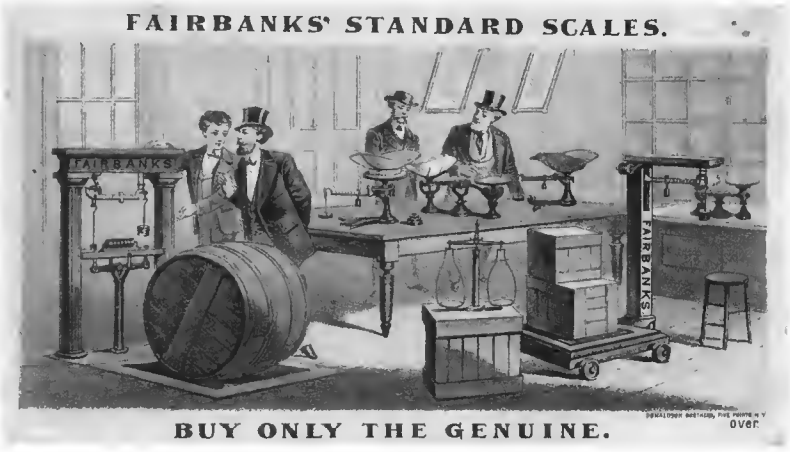


Fig. 9.

Today's prairie behemoths are of course fitted with load cell based technology that continuously monitors the grain yield by means of an impact plate, or similar device, as well as other important parameters such as moisture content. Continuous totalising in the days of the mechanical and analogue was a wholly different prospect that required ingenious mechanisms that often had a delightful 'Heath Robinson' approach to technology.

Old Advert

This old advertising card dates from the late 1800s. Its back side reads *George W. Sprague, Dealer in Hardware, Cutlery and Manufacturers' Supplies, Agent for Fairbanks' Standard Scales, 27 East Main Street, West Meriden, Conn.* It is very desirable in a scale collection as it features several different Fairbanks Scales. Editor's Collection



Book Review

I Pesi Monetali Per Le Monete Di Genova by A Buti and G Zavattoni, 2013. Size A4, that is 8¼ inches x 11¾ inches. 228 pages on glossy paper. Available from G Zavattoni, price 40 euros, packing & postage extra.

This book on the Money Weights of Genoa is in Italian, with a 2-page summary in English. As the catalogue description of each weight is methodically prepared, it is very easy to translate the key words. For example "122. Peso per Il Mezzo Scudo D'Argento, D / Madonna in contorno perlinato, intorno +GENOVINA+ +1749+ in cortino perlinato; R / liscio; forma quadrata con angeli smussati, L = 26mm; peso 19,32g; epoca: successive al 1749; area di produzione: Milano. "This translates as "122. Weight for a Half Scudo of silver, D [obverse] / Madonna in frame of pearls +GENOVINA+ +1749+ with border of pearls, R [reverse] / smooth; square shape with rounded edges, L [diameter] = 26mm, weight 19.32g; era: after 1749 , area of production: Milan".

Pages 39 to 151 show both sides of weights, exact size, with mostly seven weights per page. Pages 153 to 199 show a coin scale box on each page, including some rare and fascinating ones.

This is a comprehensive catalogue of over 700 weights for Genoese coins made over a period of 400 years, followed by selected examples of the main varieties of scales used with these weights. There is a glossary of the specialist terms most frequently used in the descriptions and a short background summary gives an excellent grounding for understanding the specific information. The authors give a concise summary about each area where these weights and scales were made or used. Close-up photographs of the makers' marks are accompanied by details of the makers, working dates and other helpful information. The authors list their sources and references by date of publication.

You are unlikely to get another opportunity to purchase this limited edition especially at a subsidised price of just 40 Euros. The sheer volume of information being published here is astounding. Buti and Zavattoni have produced a work that will become the reference standard on the subject. Each object is comprehensively catalogued in great detail and accompanied by excellent quality, full-colour photographs. If you are interested in weighing coins this book is a "must have". If you are not yet interested in weighing coins you should get the book because after reading it, you will be interested in coin-weighing. Should you be looking for a negative aspect of this book, my only wish would be that it had been available years ago! Only 100 copies are being sold at the 40 Euros price, great value, and a sound investment. Andrew Crawforth

Thomas Pyke, Brass Founder and Boaster

BY DIANA CRAWFORTH-HITCHINS

Thomas Pyke became involved with a big brass foundry in Bridgwater, Somerset, in 1762, when he was only 22 years old. The foundry made numerous domestic and Church items and sold them all round the area, as well as sending them to other areas on the ships that used the docks in Bridgwater.

We don't know whether he joined the foundry because he was a good brazier or because he had money to put into it. Whatever the reason, the foundry thrived. See Figure 1.

Figure 1. ⅄⅄ Note the trade goods illustrated round the edge, clockwise from the clock at the top, a coffee pot, an etui on a chatelaine, scissor-action snuffers, a candlestick, a tea-kettle on a stand with a lamp beneath it, a long gun [fowling piece?], a Church bell, a large copper or bushel measure, a cauldron, a dry measure, pewter plates & possibly a spittoon, a coal grate with its back, a cutlery case above, an inkwell with two quill pens on a table (perhaps just implying his office), a fancy 8-day mantel-clock/time piece, a watch (above the man's head), a 3-tier chandelier, a long-case clock, and a barrel tap or cock.

The foundry might have been run as an atelier, with several people having access to the facilities, and signing their products with their own names. Thomas Bayley had been a partner in ownership with Robert Street before Pyke got involved, and he continued to make brass items on his own account, making a chandelier in 1762, a weathercock in 1765, church clocks in 1766 and 1767 (costing £17..17s..0), a 30-hour long-case clock in 1768, a chandelier in 1770, and two chandeliers in 1773. Bayley made a three-tier chandelier for St Andrew's, Taunton. Other bells, clocks and chandeliers were known, but not dated. No further evidence of Bayley's being alive has been found after 1773.

Pyke ran the company while Street concentrated on his other business, making malt for brewing beer. The foundry was still called Street & Pyke, and contracts were signed by both of them. Were they dishonest in their dealings, or merely careful business men? They had a contract to train "parish children" (poverty-stricken or orphaned) for less than 7 years, which seems unlawful, but was a device to prevent the children being a charge on the Parish.

Articles of Agreement December 1772 between Robert Street and Thomas Pyke both of Bridgwater, braziers, founders and clockmakers and Mary Berry of Selworthy widow and William Courtis her son.

William Courtis to put himself apprentice to and with Robert Street and Thomas Pyke from 1st January 1773. They to undertake to teach him the trade of clockmaking or any other art or trade that the said Robert Street and Thomas Pyke shall think most fit and convenient.

Courtis to be paid £3 at end of 2nd year, £4 at end of 3rd year, £5 at end of 4th year, £6 at end of 5th year, £7 at end of 6th year, £10 at end of last year.

His mother to undertake to find and provide meat, drink, washing and lodging throughout the apprenticeship in sickness and in health. His money to be cut if he absents himself by means of any bodily hurt, indisposition, sickness or otherwise howsoever.

Signed Robert Street, Thomas Pyke, Mary Berry, William Courtis

---

Figure 2. ⩓⩓ Although Street & Pyke had a let-out for what they taught Courtis, it is thought that Courtis was trained as a clockmaker, and eventually worked under his mother's name as William Berry. His mother would have been under great financial strain if William had become ill during his training.

Before the Great Recoinage between 1772 and 1776, Street & Pyke made scruffy little coin scales for the eleven coins current in Britain. The people of Somerset must have been as worried about being handed a counterfeit or a clipped gold coin as in any other part of Britain, and must have bought the little sets in considerable numbers.

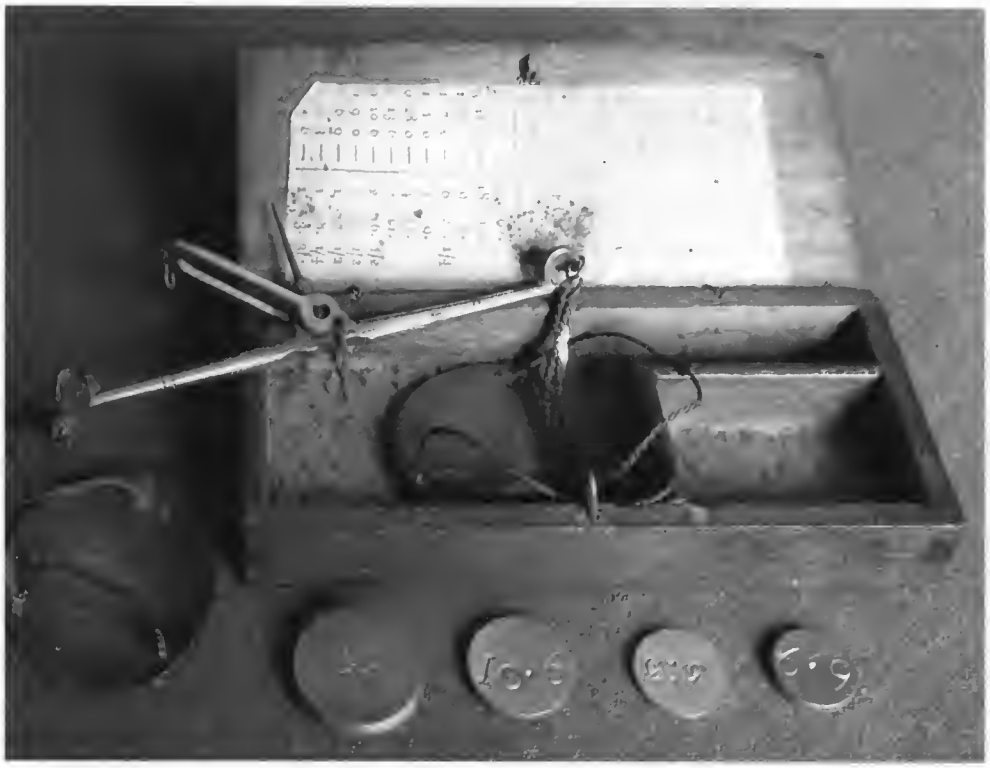


Figure 3. ⩕⩕ The weights in this set are bullion weights, in pennyweights and grains, so the user had to refer to the chart, get out the correct number of pennyweights and grains, then check the gold coin. If it was light, the user needed to get out more grain weights and add them to the coin. When equilibrium was reached, the number of grains with the coin were added up and multiplied by two, thus giving the number of pennies-worth of gold lost. Then the two people buying and selling could start negotiating!

MONEY weights & scales
of various sorts;
made & sold at Street &
Pyke's wholesale warehouse
in Bridgwater. Statical,
& Hydrostatical Balances,
by the KINGS PATENT
the utmost value given for
light GOLD COIN
The Standard weight of the following GOLD COIN at
... of 3L. 18s per oz.

£..s..d.	Pwt..gr...
3..12 .0	18 ?
1..16..0	9 6
1..7..0	6 22 ¼
1..1..0.	5 9
0..18..0	4... 15
0 13 6	3 11
0 10 6	2 16 ½
0 9 0	2 7 ½
0 6 9	1 17 ½
0 5 3	1..8 ¼
0..4 6	1 3 ¾

Figure 4. ⋏⋏ The label, taken from the box shown in Figure 3, refers to Statical balances, that is, ones weighing in air only. The hydrostatical scales were bought by more educated people, and needed careful handling with a glass of water and water weights as well as coin weights.

Although the most common gold coins circulating were English guineas (worth 21 shillings) and half-guineas, Portuguese moidores (worth 27 shillings) were also used. A few makers made rockers to check these foreign coins. What use was a rocker that could only cope with one coin?

Scales that were fixed to a counter could be quite large, but many people wanted a little set of scales (such as the one shown in Figure 3) or a rocker, either of which would fit neatly into a pocket, and could be pulled out and used at any time.

Figure 5. ≺≺ This charming little rocker, size 60 mm end to end, is stamped with crowned GR. T PYKE B WATER. It was intended for use on a counter, although not many places would need to check such a big gold coin as a moidore. Perhaps users in offices around the docks in Bridgwater expected people to pay in moidores.

Figure 6a & b. ≺≻ This folding version was a neat version for the pocket. Why didn't other makers use this solution? Could it only be seen in the South-West of England?

Moidores were collected up by the Mint to be recoined into guineas and half-guineas. Obviously they didn't disappear completely, as people kept their precious savings under the mattress or under the floor-boards. But, as a generalisation, people only wanted scales to check the new coins.

GOLD COIN MONEY SCALES and WEIGHTS of various sorts, are manufactured in the compleatest Manner, at Street and Pyke's Wholesale Warehouse, in Bridgwater, Somerset. They have at a great Expence and Trouble, procured from the Tower of London, Standard Weights of every sort; and the Public may depend on the greatest Accuracy and Truth in their Scales and Weights ____ They employ near 200 Hands, and compleat weekly Fourteen Hundred Sets; and are determined to sell as low or lower than in London, Bristol or Birmingham.

Statical and Hydrostatical Balances, by the King's Patent, Braziery, Foundery, Tin and Ironmongery Goods, New-invented Bath Hobb Stoves, and with Ovens, of various Sorts and Patterns, with their proper furniture, are finished in the compleatest Manner at their Manufactory ___ Clock Dial Plates finished in a curious Manner, Engraving in general by the best Hands ___ Clock Makers, Brass and Steel Work, Tools and Materials of the best Sorts etc etc.

Figure 7. ⮝⮝ This advertisement was in the West Country newspapers in 1775. The '200 hands' were probably making every product in the factory, and only turning to scales and weights as required. The 'fourteen Hundred sets' probably refers to the sets of weights rather than to boxes of scales, so customers could buy new weights to put in boxes they already owned. The phrase 'by the King's Patent' was a term frequently used to suggest that the item was novel or superior, but it had no legal meaning, and no patent was attached to it.

STANDARD MONEY WEIGHTS 1775 . . stampt with the Imperial Crown may be had of Messrs STREET & PYKE ... Ten Thousand Sets; Merchants, Shop-keepers and others may be immediately supplied. Their weights are adapted for weighing the old & new Guinea and the Multiples thereof, with one weight only, so as to avoid the Use of Penny weights and Grains, found upon Experience to be so very Troublesome and inconvenient .... Curious Wire, Box, Steel and other beams to any dimensions and size are now finished in the most accurate Manner by the best Hands.

Figure 8. ⮝⮝ Ten thousand sets suggests a very wide distribution, presumably as parcels sent by ship. Suggesting that one weight (for each coin) would be adequate was entirely misleading. In any argument about the exact value of the coin, grain weights or even half-grain weights would be added to the coin, and the deficiency of pennies-worth calculated. The term 'curious' has changed its meaning. Then it meant 'finely-wrought, neat, nice, excellent'.

Figure 9. ⮝⮝ No weights for light-weight guinea weights have been seen yet.

Street & Pyke pointed out that they had a glass-cased balance for checking weights precisely. The use of such a balance in 1775 was very unusual. The advert in Figure 8 mentions beams "of any dimensions" but no trade beam has been recorded.

It is usually stated that oval-japanned boxes were made in Pontypool or Birmingham, but Pyke had his own japanning factory for preparing dials for long-cased clocks, and could easily have told his workmen to make boxes for his scales.

Figure 10a. ➢➢ This unusual decoration was done by a japanner in Pyke's foundry who spent most of his working life preparing dials for long-case clocks. He did many dials with lively fresh flowers in the corners, but he obviously had an eye for a good hunting spaniel.

Figure 10b. ⩓ This box is conventional, having enough space in the pens for six weights for guineas and half-guineas of all current weights.

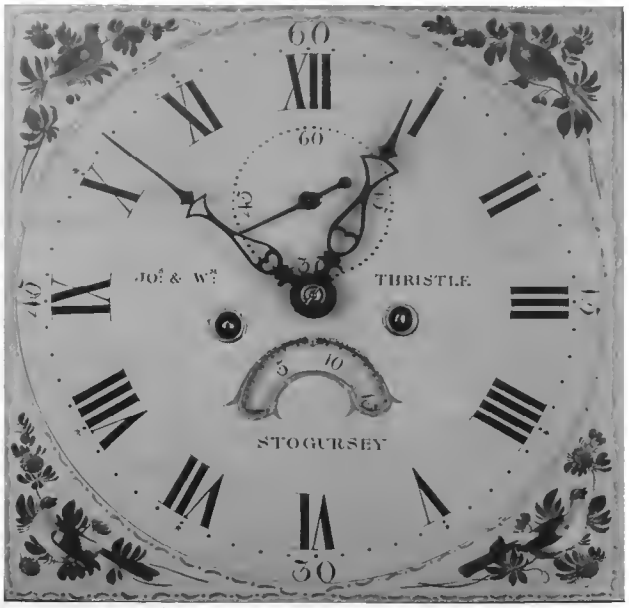


Figure 11. ⩓ Pyke sold this dial to Joseph & William Thristle, clockmakers in the near-by village of Stogursey. The Thristles bought many dials from Pyke, both japanned and polished brass engraved with scenes around Bridgwater. This dial is unusual in having a pale, duck-egg blue face, with charming imaginary birds in the corners.

Thomas Pyke had a steady rise through life (until his later bankruptcy) except for one dramatic event. He went up to London in 1775 and was held up by highwaymen with pistols as the coach crossed Hounslow Heath. One cried *D - n your blood, deliver your money, or I will blow your brains out". Pyke reported to the Court ,"I was lifting my pistol to fire at him, for I thought myself in great danger from him as a drunken man: at that instant the pistol came in at the other door, and the other man said D - n you, deliver your money instantly... I gave him my purse containing five shillings. The driver drove [us] on to Hounslow: when we came to the corner, there were some lusty young fellows standing there. I said, my lords, I am this moment robbed, there is forty pounds a piece reward for you, and I have a brace of pistols, and you may have the horses. They swore they would go after them.* The purse contained a crooked sixpence that was found on one of them when they were caught. Both were sentenced to death. Pyke must have resented deeply being waylaid if he offered forty pounds a piece reward. That was a huge sum (equivalent to at least £53,500 for each today.) No wonder they raced off to catch the highwaymen!

Street disappeared from following advertisements, and Pyke galvanised the foundry. The foundry had been known for wonderful Church chandeliers, Church bells, long-cased clocks and skillets [pans], but Pyke expanded to make Spinning Jennys for manufacturers.

To the Clothiers and Woollen Manufacturers. THE New-invented SPINNING MACHINES, or JENNY's, found on experience to be as great an acquisition, and of so much importance to the Woollen Manufacturer, are made in the completed manner at T. PYKES, Wholesale Manufactory in Bridgwater, Somerset. He has made a great improvement on the above Machine, by constructing a barrel nearly one-half the weight less than those made in Yorkshire, consequently must run much lighter.

The said T. Pyke has lately erected one of the largest and most commodious Bellfoundrys in England, where Tower Bell-work in all its various branches, Bells, and Peals of Bells, are undertaken, cast, and hung in the most improved manner Church clocks, chimes; church branches or chandeliers, from ten to one hundred guineas each. Parishes may have security lodged in their hands, not only for the value, but for the speedy return of bells, and for their being compleated in the most masterly manner; he will engage, if required, to compleat a peal of bells of ten thousand lb weight, in one month after the old bells are delivered.

Figure 12. ⩓ Should we believe Pyke when he engaged to make a peal (that is, up to eight bells) so rapidly?

Whatever the range of goods Pyke was making and repairing, it required a lot of brass. In 1785, he wrote to Matthew Boulton saying that he used 100 tons of copper and brass per annum. As Pyke said this, caution is needed, as he tended to boast. Even half that amount would be amazing in a small town.

Pyke made all sorts of small brass, iron and pewter objects. They would not have his name on them, so if they have survived, they will not be identifiable. However, fortunately, Pyke's name was put on his scales and weights, so they can be identified. Not many have survived, so it is difficult to make deductions beyond those we make from reading his advertisements.

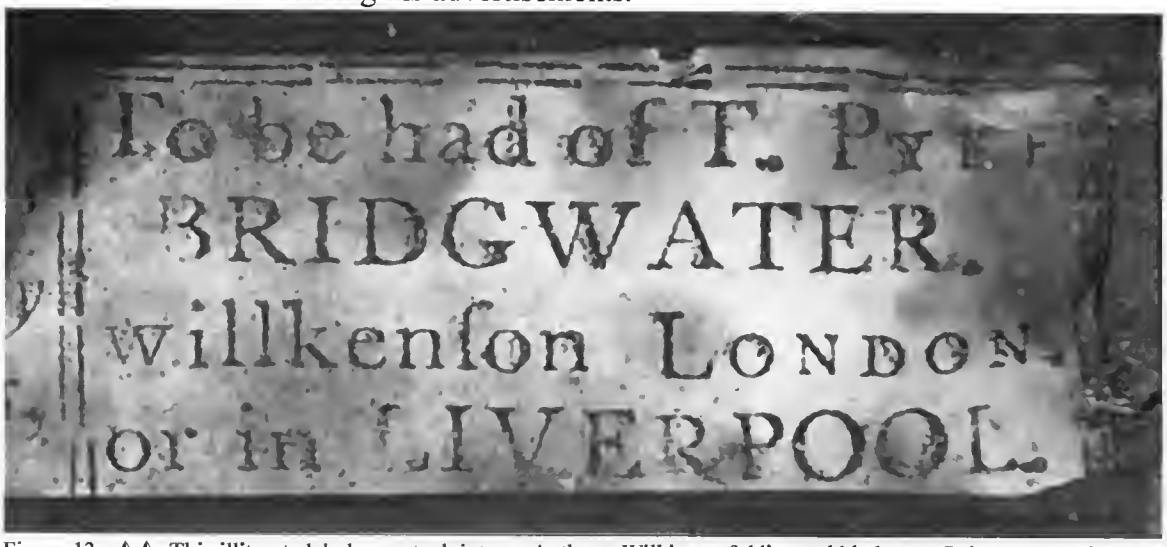


Figure 13. ⅄⅄ This illiterate label was stuck into an Anthony Wilkinson folding gold balance. Pyke seems to be confused as to where Wilkinson lived! Wilkinson did live near Liverpool, and he did sell folders to James Schooling and Thomas Williams in London. Did Schooling and Williams sell them on, wholesale? Quite possibly Peter Stubs' agents penetrated the South-West, and sold Wilkinson's folders to Pyke for Pyke to retail.

We know that Pyke owned the foundry, and that he brought his son, Thomas II, into the foundry when he was 19 years old, leaving Pyke free to become Mayor of Bridgwater. We know that he employed a large workforce who produced goods in his name. Additionally, there were other founders working in Bridgwater who may well have had access to Pyke's facilities. Did they use the atelier system, somewhat similar to that used by Avery? They made Church bells signed with their own names, so it was not identical to Avery's system.

W & T Avery, the scale makers, ran a very old-fashioned system, the Gang system. A piece-master was employed on a piece-work basis without time controls, within the factory. He engaged his own helpers, paying them what he saw fit out of his payment from Averys. The working hours were generally 6am to 6pm, although these could be expanded to meet demand. The work was very tough; all the machinery was hand-operated and the workmen had to supply their own tools and make their own drills, taps etc. The factory did have machinery for drilling, grinding and polishing but the piece-master had to pay 6d a week for their use, in addition to 5d a week for lighting. Payment was not made for wasted work even when it might not be the fault of the workman whose pay was being docked. All pieces were sold with the name of Avery on them.

Figure 14. ⅄⅄ To quote from Andrew Lound's excellent book, *Life in the Balance*, Avery owned the apparatus and large equipment, but everything the users produced was sold under the name of Avery.

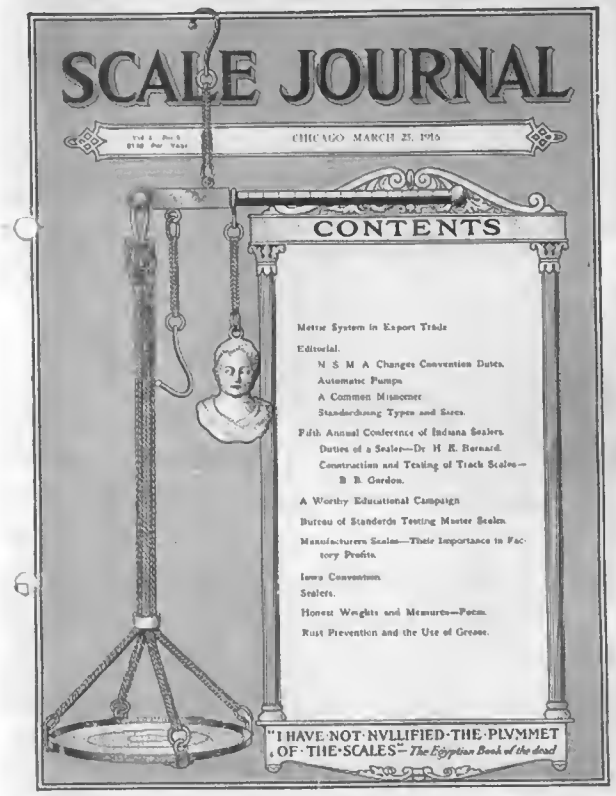
Pyke went on to open a Bank, but unfortunately, Banking became a very unstable business in about 1812-1814, and the Pykes were made bankrupt, forcing Pyke to sell all his foundry, as well as the farms, houses and estates that he had bought during the time of high profits from the foundry. What disgrace! And what a frightening time for all the skilled workmen that he employed!

Pyke died in 1829, an old man of 80. No more scales were made in Bridgwater.

Have You Nullified the Plummet of the Scales?

BY GREG MOSS

Sometimes the search starts with, *I wonder what that means?* This can be a dangerous question because it may lead to nowhere, or it may lead to everywhere – or, it may wind its way to something that's known, an "ah-ha" moment. This is that third type of story, starting with the cover of a magazine and leading to an ISASC gift.


SCALE JOURNAL

CHICAGO MARCH 25, 1915

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"I HAVE NOT NVLLIFIED THE PLVMMET OF THE SCALES"—*The Egyptian Book of the dead*

In the Beginning . . . We're now approaching the 100th anniversary of the Scale Journal, first published on October 25, 1914. If you have yet to muse over an issue, you can find some online (e.g., a Google Books search). Published for the weights and measures professionals and the scale manufacturing industry, there are articles of general interest, announcements of people and products, and even advertisements that can provide insight.

For several years, from the first 1914 issue until June 10, 1920, the cover was the same design: a simple steelyard scale on the left and the table of contents on the right.

Then, at the bottom was this quote: *I have not nullified the plummet of the scales—The Egyptian Book of the dead.*


"I·HAVE·NOT·NVLLIFIED·THE·PLVMMET OF·THE·SCALES"— *The Egyptian Book of the dead*

It's the quote that made me curious. Why would this end up on the cover for six years? What is the *plummet of the scales*?

"The Editor's Forward" to that first 1914 issue provided some context: *There are hundreds, indeed, thousands of men in the United States who are directly or indirectly concerned in the manufacture, the installation, the testing and the operation of scales. Strange to say, no medium has ever succeeded which has attempted to represent this particular field of commerce, which is a highly technical one.*

The scale for measuring commodities is as old as the records of the human race, and as suggested on our title page, those who lived 6,000 years before Christ were exceedingly anxious that the public should be convinced that they operated their scales honestly. Thus, we find in the "Book of the Dead," an Egyptian publication, that some distinguished dispensor of needed commodities, in making a confession of his sins, declared, "I have not nullified the plummet of the scales," hundreds of years before the birth of Christ.

The human race is essentially honest; a predominant percentage of all men engaged in every line of commerce are true to the trust which business imposes upon them. Yet, there are those who strayed from the straight path of prudence, and they have "Nullified the plummet," they have "Added to the weights in the balance," they have "Diminished the measure of grain."

In 1888, the British Museum obtained the Papyrus of Ani, an Egyptian funeral book which was *the largest, the most perfect, the best preserved, and the best illuminated of all the papyri which date from the second half of the XVIIIth dynasty (about B.C. 1500 to 1400).*[2] They were able to photograph and translate it into English, and the more complete second version of the Book of the Dead was published in 1895. This created widespread interest in Egyptology; so authors and presenters used references to the book. For example, the January 1903 issue of *The Grain Dealers Journal* reports on a presentation by H. A. Foss, Weighmaster, Chicago Board of Trade:

"I have not added to, nor diminished the measures of grain."
"I have not added to the weights in the balance."
"I have not nullified the plummet of the scales."
If in the future this audience happens to land before the Egyptian courts, I hope and trust that you can all justify.[3]

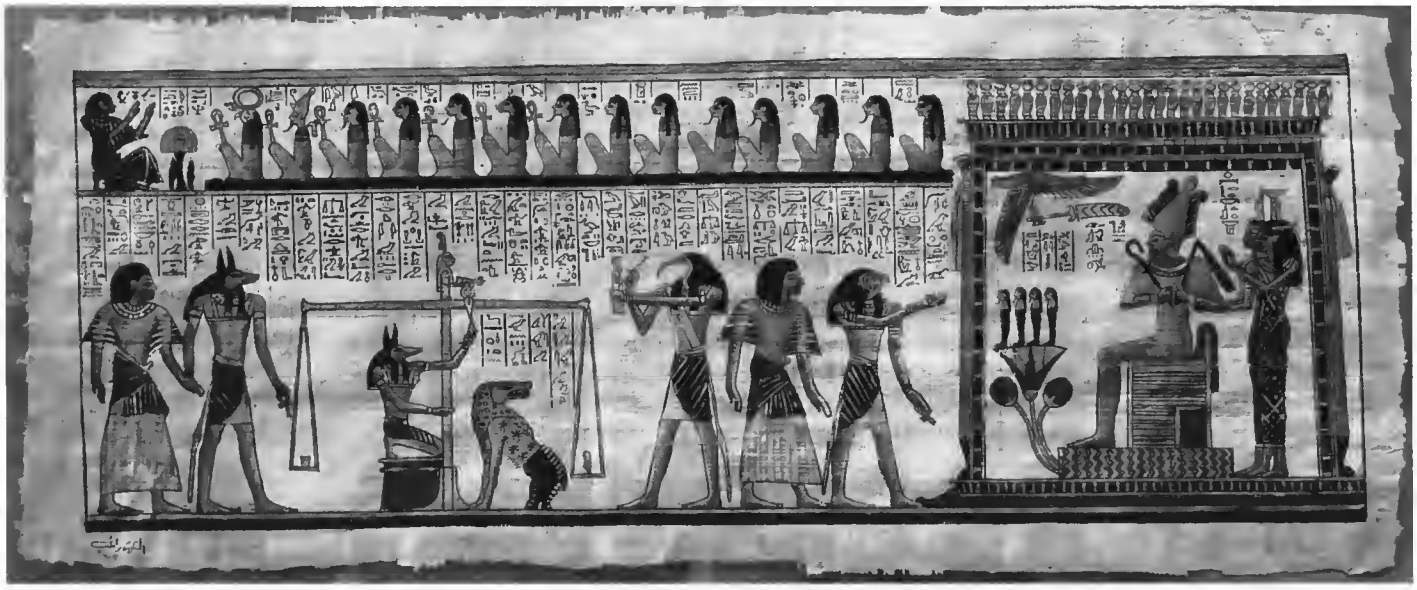
These are called *negative confessions*, a list of things that a person swears they did not do. This confession listed about 30 "I have not" statements – serious stuff that included: I have not murdered. I have not commanded murder. I have not caused suffering to men. And there was also a second confession.

"A copy of [the negative confessions] was usually deposited in the tomb, with the mummy; and when the dead man appeared before Osiris, he was supposed to recite this confession, in the two forms, as a justification of his plea for an immortal life."[4] Put another way, nullifying the plummet of the scales would deny an immortal life.

The plummet of the scale? Let's pursue my original question. My thought was that, given an ancient equal-arm balance, you could stop one side from dropping (i.e., plummeting) by either providing a slight lifting motion to the heavier side or by using over-weight weights on the other side. Brilliant, right? Wrong!

My research suddenly brought me to a papyrus drawing that I had seen before. ISASC had some copies that were given to convention attendees earlier this year, as shown in the photo, below.

The scene reads from left to right. To the left, Anubis brings Hunefer into the judgement area. Anubis is also shown supervising the judgement scales. Hunefer's heart, represented as a pot, is being weighed against a feather, the symbol of Maat, the established order of things, in this context meaning 'what is right'. The ancient Egyptians believed that the heart was the seat of the emotions, the intellect and the character, and thus represented the good or bad aspects of a person's life. If the heart did not balance with the feather, then the dead person was condemned to non-existence, and consumption by the ferocious 'devourer', the strange beast shown here which is part-crocodile, part-lion, and part-hippopotamus.



However, as a papyrus devoted to ensuring Hunefer's continued existence in the Afterlife is not likely to depict this outcome, he is shown to the right, brought into the presence of Osiris by his son Horus, having become 'true of voice' or 'justified'. This was a standard epithet applied to dead individuals in their texts. Osiris is shown seated under a canopy, with his sisters Isis and Nephthys. At the top, Hunefer is shown adoring a row of deities who supervise the judgement.[5]

And what about the plummet of the scales? It is actually like a carpenter's plumb bob. In the papyrus, Anubis is steadying the plummet.

The beam, tapering towards the ends, was suspended by a ring or cord passed through a hole in the middle, or tied round it: the scales were hung by cords [from] the ends. A "tongue" projected downwards at right angles [from] the centre of the beam. A plummet suspended [from] the same point enabled one to see when the tongue was perpendicular, and so the [balance] even.

It was easy to falsify the [balance] by slightly shifting the central adjustment, or in steadying the plummet, to incline it to one side.[6]

So that was my "ah-ha" moment: Finding that "plummet" did not mean "to fall or drop straight down" but rather it was a noun meaning "a plumb or plumb line."[7] And, there it was, right in the middle of the ISASC copy of the papyrus.

Returning full circle back to the Scale Journal, here is verse 4 from a poem published in March 1916:

So now a word in closing,
Before we turn away.
If you are cheating people,
You'd better stop today,
You may escape the eagle eye
Of the weights and measures man,
But you can't escape the eye of Him
Who all the earth doth scan.
And when life's voyage is over,
If you've been on the square,
You'll find your measure will be full
When you get over there.[8]

Notes:

All books and periodicals courtesy of Google Books (http://books.google.com).

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2. Budge, E.A. Wallis. *The Book of the Dead*, British Museum, 1895, pg v. Reprinted by Dover Publications, Inc., New York. 1967.
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http://www.britishmuseum.org/explore/highlights/highlight_objects/aes/p/page_from_the_book_of_the_dead.aspx
6. Honeyman, John Ebenezer Thomson. *The Temple Dictionary of the Bible*, J. M. Dent & Sons, Ltd., London, 1910, pg 52.
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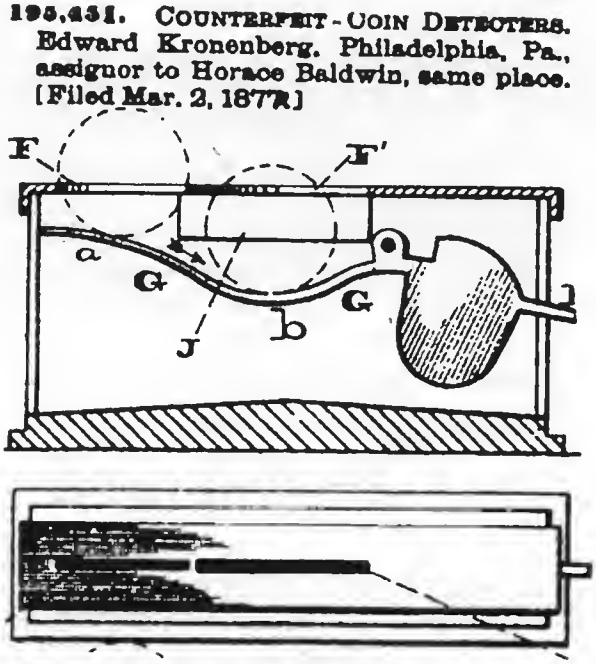
A New Variant of the Kronenberg U.S. Counterfeit Coin Detector

BY MICHAEL S.FOSTER

In 1873, the silver content of the U.S. silver dollar and half-dollar coins was changed. This stimulated some demand for the manufacture of detectors for heavy and light silver coins.

One of the inventors to respond to this opportunity was Edward Kronenberg, of Philadelphia, PA, who on March 2, 1877, filed US Patent Application No. 195.451 on a COUNTERFEIT-COIN DETECTOR, Figure 1.



195,451. COUNTERFEIT-COIN DETECTORS. Edward Kronenberg, Philadelphia, Pa., assignor to Horace Baldwin, same place. [Filed Mar. 2, 1877.]

1. The case having a top plate formed with two slots, F F', of different lengths, and extending longitudinally end to end, in combination with the single balance G, projecting beneath both slots, and having an upwardly-extending portion, *a*, and downwardly-extending portion *b*, substantially as and for the purpose set forth.

2. The case and balance, in combination with an arm, H, secured to the balance and projecting through the case, substantially as and for the purpose set forth.

3. The case with a slotted top plate and the balance, in combination with depending guiding-bars J, substantially as and for the purpose set forth.

Figure 1.
Kronenberg Patent Application[1]

Note the two platter areas 'a' and 'b' on the single balance 'G' beneath the slots 'F' and 'F'.

On September 25, 1877 the patent was granted.

E. KRONENBERG.

COUNTERFEIT COIN DETECTORS

No. 195,451. Patented Sept. 25, 1877.

Fig. 1.

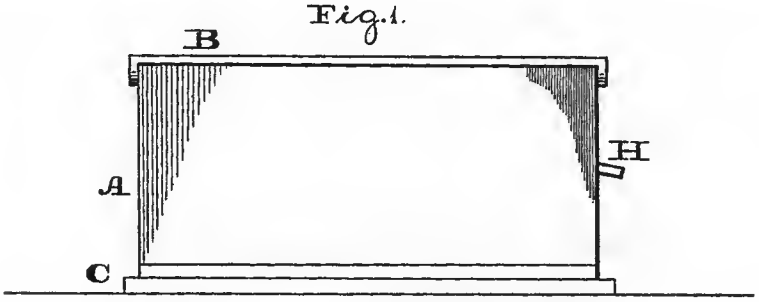


Fig. 2.

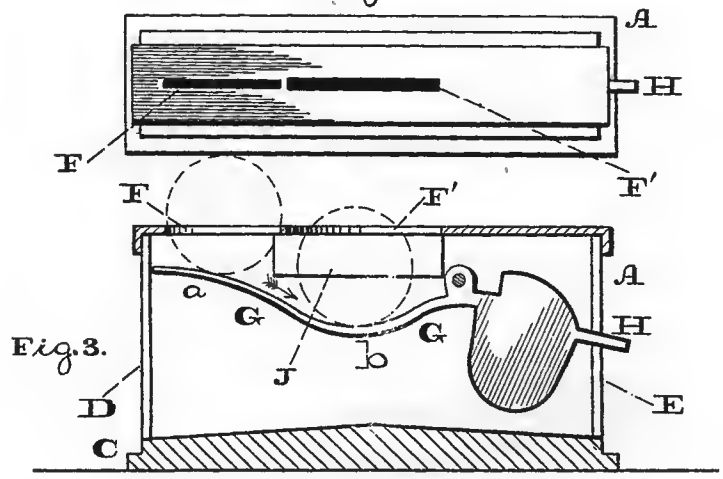


Fig. 3.

Fig. 4.

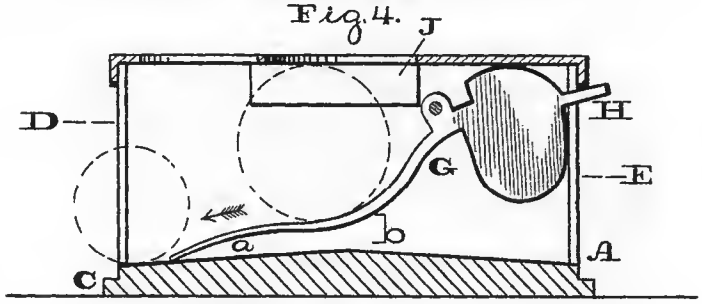
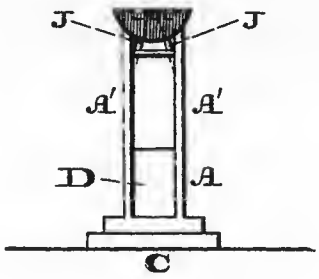


Fig. 5.



Witnesses:

Louis F. Brous!

A. P. Grant.

Inventor:

E. Kronenberg,

by John A. Wiedersheim

Attorney.

Figure 2

Kronenberg Patented Counterfeit Coin Detector Plate Variant 1[2]

There have been, to date, two reported variants of a Counterfeit Coin Detector by E. Kronenberg based on this patent. The first is the CCD illustrated in the patent and shown below in Figure 3. This CCD is the only known example of the Variant 1 rocker and is most likely a prototype. It is the same one shown in Don Gorlick's article on p.763 of *Equilibirum*[3 & 4].

Figure 3
Kronenberg Variant 1
Photo Courtesy Eric P. Newman Numismatic Education Society.

The box is labelled "KRONENBERG'S PATENT".

This rocker style has some similarities to the sloted Base Coin Detectors made by BENETFINK & Co. (known examples 1852-55) and AVERY (known examples 1887-90), see Figure 4.

Figure 4
Avery Base Coin Detector

Figure 4a
Avery Base Coin Detector Side View

These Base Coin Detectors used an individual rocker with platter and poise for each coin mounted under the labelled slot which checked the diameter and thickness. A good coin would drop through into the box.

The Kronenberg Counterfeit Coin Detector used two platters and a single poise to check two coins. The author believes that Kronenberg's implementation of Variant 1 suffered from problems with the larger coin properly sliding off the platter area and out the end slot, see D in Figure 2 (Plate Figure 4) of the Patent Diagrams.

There is one known example of a new variant of the Kronenberg rocker, Variant 2, for US silver but with "Holes" of the correct diameter to take the 25 and 50 cent silver pieces instead of slots, Figure 5. This example is also most likely a prototype to make use of a simpler slide platter handling both coins with the coin to be tested positioned relative to the single poise by the "Holes" which also checked the diameter.

Figure 5
Kronenberg Variant 2

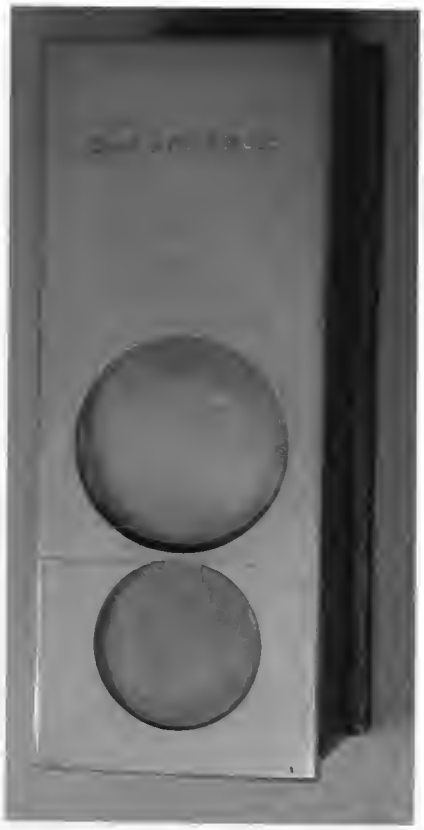


Figure 5a
Kronenberg Variant 2, top view

This Kronenberg rocker could check the weight and diameter of the coin but not the thickness, and wasn't a counterfeit coin detector. The box is labelled "PAT. APP'D FOR".

Kronenberg came up with his final solution, the most widely known, Variant 3, shown in Figure 6. This time with coin gauge slots to check the thickness along with the "Holes" for weight and diameter.

Figure 6
Kronenberg Variant 3

Figure 6a
Kronenberg Variant 3, top view

The gauge slots, unlike in the Avery and Benetfink & Co. examples, are not used to feed the weight testing portion of the Counterfeit Coin Detector which is under the circular holes. The box is labelled "PAT. APP'D FOR", U superimposed on a reversed S, and "COIN DETECTOR".

There is no record of a second Patent application by Kronenberg for this Variant.

References:

1 *Official Gazette of the United States Patent Office July - December 1877*, by the United States. Patent Office.

2 *Specifications and Drawings - Patents* - Issued from the United States Patent Office, September 1877.

3 "American CCD's Counterfeit Coin Detectors", by Don Gorlick, ISASC *Equilibium* p.759-764.

4 "Ameriean Patent CCD's - No.5 - A Series on Counterfeit Coin Deteetors", by A. George Mallis, ISASC *Equilibrium* p.902-904.

Showcase

This extremely rare US 1.5" diameter counterfeit coin detector was patented on March 27, 1877 by John W. Sutton of NY City. It is constructed of nickel plated brass and measures diameter, thickness and weight of 10, 25 and 50 cent coins of the period. Diameter of a coin is measured on the concentric circles, and thickness by use of the 3 slots around the sides. "A pen knife edge was inserted in the proper wedge shaped hole to act as a fulcrum . A coin of proper weight would cause the device to rotate clockwise.[1]"

1. Newman & Mallis, *US Coin Scales*, 1999.

Jerome Katz Collection

The Story of Nation Scale Company

BY BILL BERNING

In 1925, 23 year old Glen Wilton Nation and his brother were busy publishing a small newspaper in Santa Fe Springs, California. During the 1920s, this town was the site of a big oil boom. Nation was also selling advertising for the *Los Angeles Times*. During this period he claimed, in a February 2, 1947 article in the Nashville Tennessean, that "he accumulated a vast fund of curious knowledge concerning the habits of the weighing public".

Figure 1. Nation Scales were built on the 2nd floor in the building now housing the Ernest Tubb Record Shop.

In about 1927, Nation became a penny scale operator in Florida. In 1940, he expanded his scale operation to include Nashville, Tennessee.

In April of 1946, Nation designed a new penny scale and began manufacturing. Due to the building shortage after the War, he was forced to use the second floor of an old building at 417 Broadway in Nashville, Tennessee. This building once housed a Civil War hospital and is currently home to the "Earnest Tubb Record Shop" (Figure 1).

Nation's original idea was to manufacture penny scales exclusively for his own operation. Once he got the business set up, he found he could make more scales than he could use. He ran an ad in *Drug Topics* magazine, a publication for pharmacists, offering the scales for sale to drug stores. The ad brought in $50,000 worth of orders and Nation found himself in the scale manufacturing business.

Figure 3. The aluminum step plate has an outline of the US with a star for Nashville where the scale was manufactured.

Nation hired nine ex-servicemen to help him

Figure 2.

build his scales. They could turn out about 10 scales a day which were sold directly to drug stores, grocery stores, dime stores, theaters or operators. At this rate, they had produced about 500 scales between April 1946 and February 1947 when the *Nashville Tennessean* article was published.

The scale (Figure 2) is of Mr. Nation's design. The column is made of aluminum in Birmingham, Alabama, the springs (Figure 4) are made in New York, the dial and mirrors are made in Chicago and the rest is made, adjusted and tested in the Nashville, Tennessee plant. The aluminum step plate (Figure 3) features an outline map of the United States with a star indicating the location of Nashville, Tennessee. The Nation scale shares many design features of the late 1930s Mills Trylon penny scale. The Mills scale was one of the last new scale designs before the war. The Nation scale was one of the first new designs after the war. In the *Nashville Tennessean* article, Nation claimed patents for both the design and the mechanism were pending. None of these patents has ever been found.

Nation received more publicity for his scale from a March 8, 1947, article in the *Billboard* magazine. In the June 14, 1947 issue of *Billboard*, Nation Manufacturing Company is listed under the heading of "new machines."

Figure 4. The helical springs of the Nation Scale were made in New York, possibly by Chatillon. They are constructed of heavy flat steel strips rather than the common steel wire found in most coin operated penny scales. Below the springs, the casting clearly reads *Nation Mfg. Co. Inc.* Photo courtesy Jay Overman

Presumably very few of these scales were made. Very few scale collectors have an example in their collections. The known serial numbers seem to indicate this same finding. Known serial numbers include 46260, 46334, 46464, 46467, 46496, 46633, 46656, 46682 and 46753. The 46 in each number might indicate the year of production, 1946.

What happened to Glen Nation's business? During the 1930s, the penny scale business was a thriving business, with 10s of thousands of scales produced by many companies. During this period, bathroom scales were very expensive and not many people owned one. After the war many scale companies made cheap bathroom scales and the penny scale production and operation gradually decreased. The Nation Manufacturing Company seems to have just disappeared after a short run of penny scales. If you have a Nation Scale in your collection, please let me know the serial number.

'MIDGLEY & Co' on the Beam BY MICHAEL FOSTER

There is a distinctive sovereign rocker with a 'MIDGLEY & Co' stamp found on the beam. Who was Midgley & Co. and were they makers or retailers?

Michael Crawforth identified a Charles Midgley & Co., Engineers, of Berry Lane Mills, Halifax, Yorkshire in 1867, from *Kelly's Directory of Halifax*. According to his index cards, Michael also checked Kelly's Directories for 1857, 1861, 1863, 1864, 1866 and 1870 but only found Midgley & Co. listed in 1867.

The author has access to *White's Directory of Leeds* which includes Halifax for 1866, and 1870, and has looked for the name Midgley and for companies on Berry Lane. Berry Lane is in Lower Kirkgate, Halifax. The name Midgley is very common in Yorkshire and there are several in the Halifax area, but few that qualify as candidate companies for makers or retailers of sovereign rockers.

In 1866, there were no candidates at Berry Lane, and Charles Midgley isn't listed. In the 1870 Directory, at

Berry Lane Mills, there was a William Johnson & Co., millwrights and engineers listed who could be the follow-on company from Michael's 1867 listing.

Looking at newspapers of the time at: http://www.britishnewspaperarchive.co.uk/ we find advertisements run by Midgley & Co., Engineers, Halifax for "Pushing Men" and "Agents" to sell a "Gold Coin Detector" during the summer of 1867.

From the *Sheffield Independent of 10 July 1867*:

WANTED, Pushing MEN, to Sell a Gold Coin Detector. £3 to £4 per week may be realised.—Address, with stamped envelope, MIDGLEY and Co., Engineers, Halifax.

and the *Freeman Journal of 28 August 1867*:

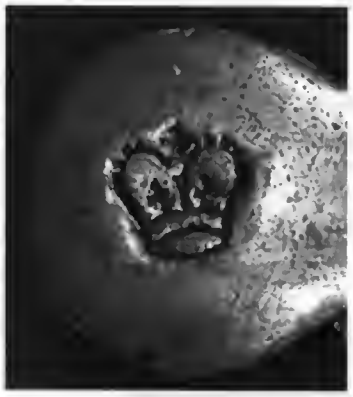
WANTED in all Towns active Agents to to Sell a Gold Coin Detector. £3 to £4 per week may be realised. Address, with stamped envelope, Midgley and Co., Engineers, Halifax.

Different advertisements and classifieds appear to have been inserted by Midgley & Co. in many of the papers of the time from October 1865 up to September 1868. This gives us a better window on their period of operation.

An advertisement in the *Manchester Courier and Lancaster General Advisor* on the *14 March 1866, p.2*, has Midgley & Co. recruiting "Smiths and Strikers", perhaps for the manufacture of their Gold Coin Detector.

It would appear that Charles Midgley and Co., engineers, were only around for a short period from late 1865 to late 1868, and sold their sovereign rocker in 1867-68.

The Midgley & Co. maker mark crown:



D13: Midgley & Co. Type 1

is found on the following distinctive 'MIDGLEY & Co' stamped rocker:

'MIDGLEY & Co' sovereign rocker

Note the beam, base and platter shape and Fleur-de-lys finial

Note the Platter labelling, "WARRANTED SOVEREIGN" and "HALF SOVEREIGN", unique to Midgley rockers

The box label reads: "**Improved Sovereign Balance,** / To Weigh and Gauge Sovereigns and Half Sovereigns, / WARRANTED BUSH'D WITH STEEL. / Being so exact that no counterfeit can possibly go through the gauge / of sufficient weight to turn the balance."

To complicate matters there is a possible second Midgley maker mark crown stamp that has come to light on a few unnamed rockers in the last two years.

This unnamed 'Midgley Style' rocker displays the same style poise, beam, base and Fleur-de-lys finial, but with a blank beam, a different but similar crown stamp and different platter labelling. This would appear to be by the same workshop as the Midgley & Co. rockers.

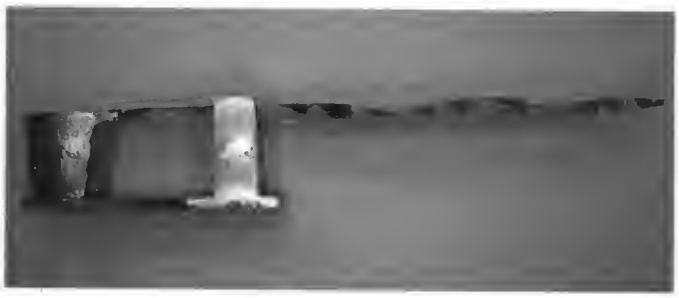
The crown stamp, D14, is perhaps a version of D13. This rocker has more typical Birmingham style platter labelling than the Midgley rocker?

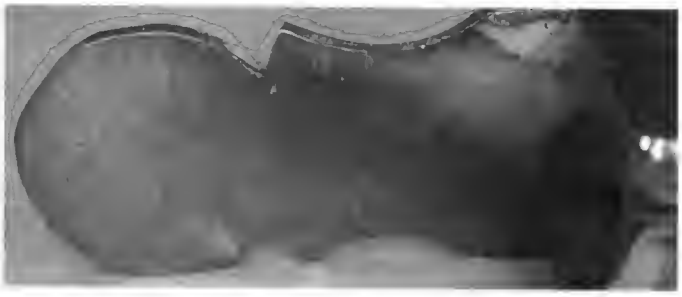
D14: Midgley Style Type 2
- early Midgley or
follow-on maker's mark?

Midgley Style sovereign rocker

Note the beam, base and platter shape and Fleur-de-lys finial

Note the more typical Birmingham style platter labelling, "SOVEREIGN WARRANTED" and "SOVEREIGN ½".





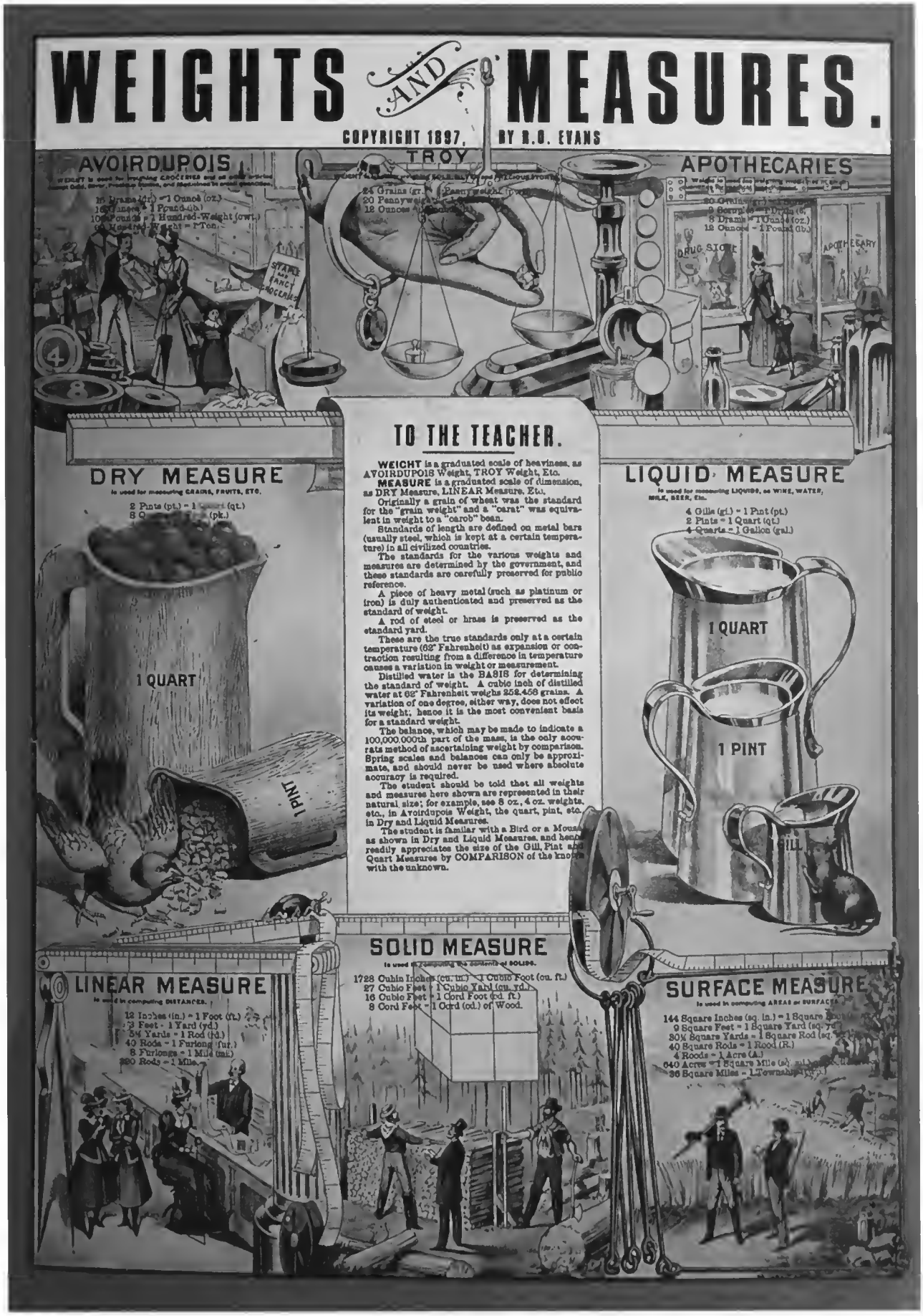
It appears that Midgley & Co. was a maker and manufactured their "Gold Coin Detector" sovereign rocker sold by "Active Agents" and "Pushing Men" with the D13 maker mark crown and 'MIDGLEY & Co' labelling.

Perhaps a follow-on company (like William Johnson & Co.) dropped the name stamp, changed the crown to D14 and went to a more traditional style of platter labelling, or the rocker with the D14 crown was a prototype or perhaps made for retailers. The readers will have to draw their own conclusions from this information.

Showcase

Ubrig made this candlestick and quadrant family scale for the Spanish market. Its mechanism features a cog and rachet to turn vertical movement into rotary movement. and was manufactured in Germany. The patent number 1478 issued on 19 January 1897, reads in part *A top-pan balance with a tension spring resistant, has a linkage connecting the leg to a rotating pointer. The pointer registers on a graduated arc marked with weight and attached to the front of the casing.* The base is ornate cast iron, the dial is porcelain and the pan is brass.

These scales were also manufactured as a parcel post model for use in the English market.



Complements of Utz Schmidt.